

DUTCH ECONOMIC GROWTH IN COMPARATIVE-HISTORICAL
PERSPECTIVE, 1500–2000

BY

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Summary

Our knowledge of nineteenth century Dutch economic performance has been greatly improved by recent research. However, the interpretation of long-run Dutch economic development requires a re-examination of the concepts and generalizations used by economists, which derive mostly from the study of other nations, especially Britain. This article proposes both a reassessment of Dutch economic performance in the very long run, and a reconsideration of the concept of modern economic growth.

1 INTRODUCTION

Today, the broad macroeconomic measurements of an economy, such as national income and gross domestic product, show the Netherlands to be quite typical. It is nestled comfortably within the range of per capita figures for the advanced industrial economies. In 1997 Dutch GDP per capita stood approximately ten percent below the leading large economies (Germany, the USA), and nearly 30 percent above several others, such as Italy, Britain, and Canada. If one prefers to recast these data in purchasing power parity terms, the Netherlands found itself nestled even more snugly among its European neighbors: 1–2 percent below the leaders, and 2–3 percent above the laggards.¹ This is what one might expect of a small open economy that has long participated in a growth process that is broadly shared by its geographical neighbors and its most important trading partners.

It also confirms the economist's faith in the principal of convergence, the expectation that economies will tend over time to grow at rates inversely related to their initial per capita income level.² But here the historian cannot resist raising the question: converge from where? At some point in the distant past, presumably, economic life across much of Europe, if not Eurasia, was broadly similar in technology, capital, and human capital. Geography and political conditions could bring about departures from the norm that revealed themselves primarily in higher or lower population densities, but the resulting differences in economic well-

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1 *The Economist, World in Figures, 1999 Edition*, pp. 24–25. OECD data.

2 Barro (1997), pp. 1–2.

being were not large, nor were they the enduring products of cumulative processes of economic growth.

If this assumption is accepted, then the principal questions of long-term comparative economic growth among modern developed economies must concern *timing* – when did the economies grow and stagnate relative to each other? – and *structure* – how did economies differ with respect to occupational distribution, urbanization, and industrialization? Here, again, the historian insists on adding a third question, concerning *origins*. That is, when, and how did the process of modern economic growth begin in the first place?

On the matter of origins, economic history as a discipline has long been virtually unanimous in its answer: modern economic growth (that is, sustained, long-term growth of per capita output) is the achievement of the industrial revolution, an event that began in a definite geographical location (northern England) at a definite period of time (the reign of George III), and that spread gradually to embrace the societies that now can be called advanced industrial economies.³ This event stands as the gatekeeper between two types of economic life; only an economy that has been transformed by an industrial revolution can pass on to experience modern economic growth. And, only such growth can be measured by the categories of national accounting, while the economic life preceding it requires altogether different tools and concepts, since it was incapable of sustained growth. Sir Tony Wrigley and Roger Schofield put it this way: ‘What is meant, indeed, by a pre-industrial economy is a system in which movements of incipient expansion cannot fructify in a sustained exponential growth, but rather tend to provoke changes that will make continued growth more and more difficult to secure.’⁴

The ‘negative feedback loops’ that are the centerpiece of models of the pre-industrial economy are most commonly presented in neo-Malthusian terms, where sharply diminishing return to agriculture, or inelastic energy supplies, form constraints that are unmovable within the terms of the economic system. Any growth was strictly temporary, and as it was periodically checked, tended to trace slow oscillating cycles – or a secular trend – that emerge as the great historical protagonist of pre-industrial economies, setting limits on peasants and potentates alike.⁵ Scholars guided by Marx rather than Malthus discount the importance of

3 The concept of modern economic growth is closely associated with the work of Simon Kuznets. See especially Kuznets (1966).

4 Wrigley and Schofield (1981), p. 463.

5 In Braudel (1972), population change is the great historical protagonist. He estimated (‘Stepping Beyond the Limit of Prudence’ I: p. 402) a doubling of population in the Mediterranean region in the course of the sixteenth century (from 30 to 60 million), and went on to claim that ‘...this biological revolution was the major factor in all the other revolutions with which we are concerned, more important than the Turkish conquest, the discovery and colonization of America, or the imperial vocation of Spain.’ (I: pp. 402–403)

Why did this growth of population so quickly overwhelm Mediterranean society?

physical constraints, but honor nevertheless the principle of 'no sustained growth' by invoking the inherent, development-inhibiting contradictions of feudal relations of production or the rent-seeking mentality of merchant capitalists.⁶

In summary, until recently, modern economic growth was thought to be inaugurated by an industrial revolution which began in Britain in the second half of the eighteenth century and spread, in the course of the following century, to the countries that have come to be known as 'western.' Before then the interaction of population change with the constraints of food production, energy supplies, and, perhaps, elite surplus extraction generated cyclical movements of real incomes, but nothing that warranted the name economic growth.

2 THE NETHERLANDS AND THE SEARCH FOR MODERN ECONOMIC GROWTH

In the construction of this 'master narrative' the historical experiences of some nations have been particularly influential, while others have contributed little. The Netherlands have stood in the latter group. In comparative economic histories the Dutch experience is rarely emphasized. When mentioned at all, it is as an exception to the general pattern.⁷ There are several reasons for this: some are endogenous to Dutch economic history; some are imported from abroad.

Twenty years ago it was not possible to offer a credible account of the long-run macroeconomic development of the Dutch economy. At that time acceptable data, including national accounts, existed only for the twentieth century. The Centraal Bureau voor de Statistiek (CBS) data had been pushed back to 1900, but

'[I]n the end this forward movement was brought to a halt by the very inelasticity of agriculture, under the same conditions as in the thirteenth century [i.e., the previous crest of population growth]... The logic of later Malthusian arguments was already visible... the inelasticity of agricultural production had reached its ceiling and the result of this impasse was to be the 'refeudalization' of the seventeenth century, an agricultural revolution in reverse.' (I: p. 427)

Braudel did not depart from this view in his later works, 'This humanity in perpetual motion controls a good share of the destiny of mankind' he wrote in Braudel (1977). '[T]heir ebbs and flows reveal the rules for the long-term trends that continued to operate until the eighteenth century.' (p. 9)

6 On the transition from feudalism to capitalism as it applies to the Netherlands, see Peter Hoppenbrouwers and Jan Luiten van Zanden (eds), (forthcoming). On merchant capitalism see van Zanden (1991).

7 Gerschenkron (1962) does not discuss the Netherlands, nor does Trebilcock (1981). Pollard (1981) offers two pages (pp. 237–238). Sylla and Toniolo (1991) mention the Netherlands in one paragraph, only to note that its banking history does not conform to expectations (p. 55). David Landes, in his *magnum opus* (Landes (1998)), devotes several pages to 'the loss of leadership' (his preferred explanation is loss of vigor among a satiated elite – i.e., the *Jan Salie geest*). On Dutch growth after 1850 he only notes that: 'The quiet entry of the Netherlands into the world of modern industry is reflected in the general indifference of economic histories. The country barely gets on stage.' (n. 15, p. 523). The problem is not improved by the manifesto of a group of Dutch economic historians to approach Dutch economy and society (invoking Jan Romein) as an 'afwijking van het algemeen menselijk patroon.' [an exception to the general human pattern]. (Davids et al. (1988)).

before that date no credible time series existed for prices or national income.⁸ The nineteenth century was a veritable black hole and it long remained so because of the great authority of the regnant historical interpretation of nineteenth century Dutch history that identifies the liberal constitution of 1848 and the political changes that came in its wake as the catalysts of social and economic reinvigoration, rousing a complacent nation from its lethargy. This political narrative made it almost impossible to imagine that the Dutch economy could have experienced economic growth before the mid-nineteenth century,⁹ and this predisposition was strengthened by the implied lesson of the British Industrial Revolution that modern growth begins with the rise of a significant complex of technologically advanced industries. J.A. de Jonge demonstrated that such an industrial sector could not be found in the Netherlands before the 1890s.¹⁰

At that time a substantial literature also existed on many dimensions of the seventeenth and eighteenth century Dutch economy, illuminating the many facets of the commercial power that was the Dutch Republic. This literature did not lend itself to macroeconomic reconstructions of national income, to be sure, but it was by no means bereft of quantitative data. However, linking this literature to that of the late nineteenth and twentieth century long proved impossible. One important reason was imported, as it were, from Britain. The standard account of the British Industrial Revolution held that it took the form of a sudden discontinuity that rapidly lifted British GDP. The authoritative estimates of Deane and Cole had the British economy growing 5.4 fold over the period 1780–1900, good for an average annual rate of growth of 1.4 percent.¹¹

If one accepted that the nineteenth century British achievement was on this order of magnitude, and accepted the reasonably well founded data for 1913, which place Dutch per capita GDP at 70 percent of the British level, then one stood before two possible paths of Dutch development, neither of which could be made to conform to generally accepted facts. One could hold to the ‘liberal’ view that the Dutch economy did not begin its modern growth until after 1850, in which case the level of Dutch GDP before 1850 would have been far above that of Britain, and in the eighteenth century, double to triple the British level. Or one could hold to the ‘Golden Age’ position that Britain caught up to an advanced Dutch Republic in the early stages of her industrial revolution, in which case Dutch performance in the entire nineteenth century would have to have been only

8 Several papers offered ‘heroic guesses’ of national income back to 1850 based on *ad hoc* interpretations of available time series (energy use and tax revenue), Teijl (1971); J.B.D. Derksen made calculations that were not published, although his results were reported in van Stuijvenberg (1967), p. 73. The extent of our ignorance was made clear in articles by Griffiths and De Meere (1983) exposing the weakness of the existing literature.

9 Van Stuijvenberg and de Vrijer (1982).

10 De Jonge (1968).

11 Deane and Cole (1967).

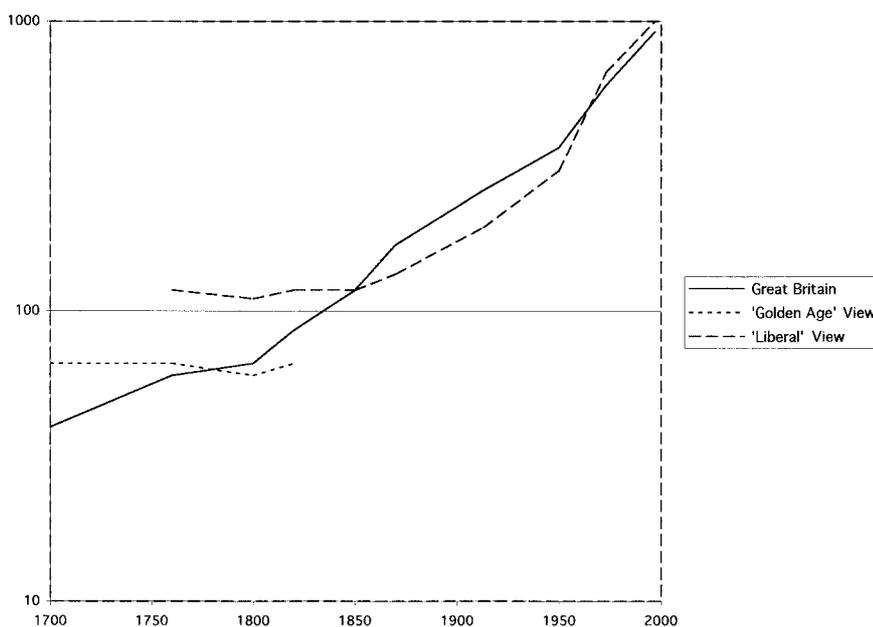


Figure 1 – Two views of Dutch growth
British GDP, 1830 = 100

marginally inferior to dynamic Britain.¹² To believe the liberal scenario required defending a high eighteenth century starting point for which there is no supporting evidence; to believe the 'Golden Age' scenario required identifying a nineteenth century Netherlands fully the equal of its most dynamic continental neighbors. This, too, lacked supporting evidence. Consequently, one was left with an incoherent master narrative. There was no credible way to establish the origins of modern growth in the Netherlands, or to determine how it compared to others with respect to the timing and structure of its development.

In the past two decades a number of advances have been achieved laying the foundation on which a new account of Dutch economic growth can be constructed. To begin with, a major research project, 'Reconstruction of the National Accounts of the Netherlands,' under the leadership of Jan Luiten van Zanden, has generated a wealth of new data on, and systematic analysis of, the nineteenth century Dutch economy.¹³ The findings of this multifaceted project raise many

12 The alternative scenarios are discussed more fully in Riley (1984). See also de Vries (1984).

13 A large number of dissertations have been produced under the auspices of the project. Summary findings are currently available in the unpublished conference papers, 'Historical National Accounts for the Netherlands. Economic Growth and Structural Change, 1800–1913,' 19–20 December 1997; and Smits, Horlings, and van Zanden (1997). My characterizations of the project's findings are drawn from these documents.

new questions (as is the way with original research) but it has also succeeded in clearing the terrain of nineteenth century Dutch economic growth of many historiographical weeds that long obscured the view of its actual course.

Angus Maddison introduced his recent study of modern economic growth by noting that over the interval 1820–1990 the 16 countries for which he has assembled data (12 European countries plus Japan, Australia, Canada, and the USA) together grew 5-fold in population and 14-fold in per capita GDP, for a 70-fold aggregate real growth of economic output. It is now apparent that the Netherlands stands out in this summary of modern economic achievement by having the highest rate of population growth of any European country in Maddison's data set (6-fold) and the lowest growth of GDP (9-fold) of any country except Britain (which had by 1820 already experienced several decades of its industrial revolution).¹⁴ Thus, the normative 70-fold growth of Maddison's 'capitalist epoch' was, for the Netherlands, only a 54-fold achievement.

It is especially in the nineteenth century that we find a 'divergent' Dutch performance. The new national accounts set Dutch growth of per capita GDP at 0.8 percent per annum over the 1820–1913 interval, while all other European countries in the Maddison data set grow by 1.0 to 1.3 percent. The overall Dutch growth rate is low, but this is not the result of pre-1850 stagnation, for the new findings reveal a quite steady growth rate over the entire century. There was no Dutch 'take off,' a period of acceleration that was long thought to be the distinguishing statistical mark of an industrial revolution.¹⁵

The newly revealed steady long-term growth of the Netherlands, beginning long before the post-1890 rise of modern industry, confirms the intuition of Richard Griffiths, who expected findings of this sort when he argued that the nineteenth century Dutch economy experienced '*stiekeme groei*,' or surreptitious growth.¹⁶ By this Griffiths meant that the Dutch economy grew even in the absence of conspicuous industrial 'leading sectors' on the strength of agricultural and service sector developments. This leads us to a related feature of the nineteenth century Dutch economy, the absence of radical structural change. The Netherlands in 1807 featured an employment structure in which only 43 percent worked in agriculture, while industry claimed 26 percent and the services sector 31 percent. In 1890 the agricultural sector had shrunk only to 37 percent, while the two other sectors shared the 6 percentage points thus relinquished. The Dutch

14 Maddison (1991), pp. 5–10. The Dutch performance is corrected to reflect the findings of the Historical National Accounts project.

15 The short period of rapidly accelerated growth, posited as the point of origin of modern industrial development by development economists and economic historians of the 1950s, has long proved elusive to empirical investigators. However, recent research on the Belgian national accounts has revealed a quite striking discontinuity in the period 1850–1870, when per capita GDP growth reached 2.7 percent per annum. In the decades before and after, growth rarely reached one percent (Horlings and Smits (1997)).

16 Griffiths (1980).

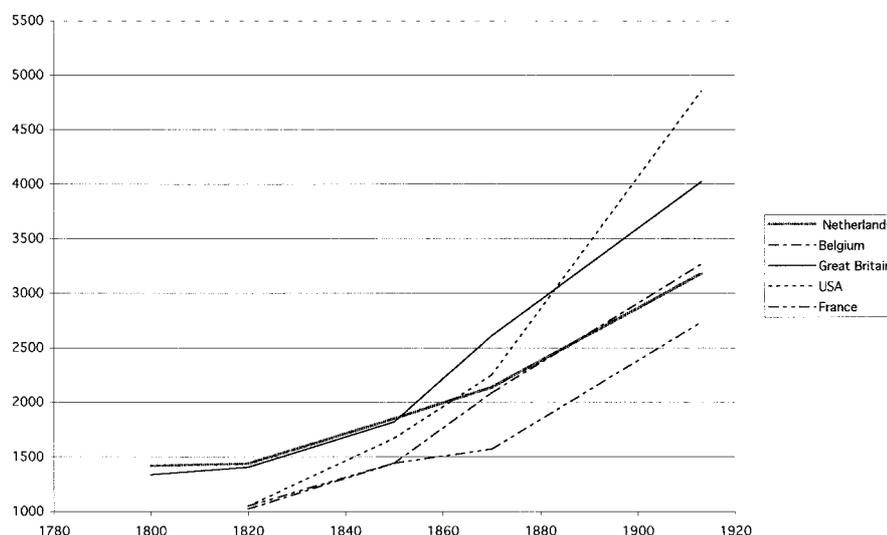


Figure 2 – GDP per capita, 1800–1913 (in 1985 US dollars)

Source: Angus Maddison, *Dynamic Forces in Capitalist Development*, Oxford, 1991; J.P. Smits, E. Horlings and J.L. van Zanden, 'Spreekende cijfers! De historische nationale rekeningen van Nederland, 1807–1913'; *NEHA Jaarboek voor economische, bedrijfs- en techniekgeschiedenis* 62, 1999, pp. 51–110.

economy could grow over this period, despite the failure of agriculture to retreat more rapidly, because there was no large gap between labor productivity in agriculture and industry.

When the new findings are attached to the accepted early twentieth century benchmarks, and compared to the data for other European countries, we move backward to the early nineteenth century to find a Dutch economy that has a relatively modern structure (only Britain has so small a share of labor in agriculture), a diversified economy capable of growth in many sectors, an energy supply per capita second only to Britain's, and a per capita income in 1820 still higher than any other economy, including Great Britain. It is only in the course of the nineteenth century that first Britain, followed by the USA and Belgium (and, by some accounts, France, Switzerland, and by 1913 perhaps also Germany) would push ahead of the Netherlands.¹⁷

The second major advance is actually a revised understanding of the British economy, but, as we will see, it has profound implications for the interpretation of the Dutch economy. A combination of new data and improved methods has led to a major revision of the estimated aggregate economic growth rates expe-

17 Maddison (1991), p. 7. The Dutch position in 1913 is less favorably estimated in Prados de la Escosura and Sanz (1998).

rienced by Britain during the Industrial Revolution: a downward revision, removing more than half of the growth in national product that was earlier thought to have occurred in the period 1760–1830. I cannot here enter into a full account of the implications of this revisionism for our understanding of the industrial revolution. It remains a profoundly important event, but it is now appreciated for reasons other than a ‘take off’ of national income, the growth of which is now seen as gradual and delayed relative to the breakthrough celebrated as the Industrial Revolution. For our purposes, the revisionist interpretation has two important implications. First, the revisions leave a British economy on the eve of the industrial revolution that was more industrial in structure and in receipt of a significantly higher per capita income than had earlier been supposed. The benchmark structure and income level of a ‘pre-industrial’ economy is thereby changed and this has implications for the Netherlands as well as for Britain. Second, a path is opened to imagine substantial economic growth occurring without necessarily passing through the specific type of industrialization experienced by Britain. In John A. Davis’s words ‘once the identification between industrialization [mechanized production] and economic growth is loosened ... the process of economic growth necessarily becomes more open ended, making it difficult, if not impossible to establish *any single optimal path* [to modern economic growth]’.¹⁸ In short, the revised understanding of the British Industrial Revolution places the Dutch economy of the late eighteenth and early nineteenth centuries in a new light: its structure is less peculiar and the estimates of its income levels are more credible. They are more credible because a large space is opened up by the British revisionist literature between the observed levels of economic activity around 1800 and notional ideas about the subsistence level. Twenty years ago it was generally thought that sustained growth could not have occurred for any length of time before the nineteenth century, since as one moved backward in time one would quickly reach unsustainably low income levels.¹⁹ Now, there is room for significant growth, differentiating the economic capability of economies.

The third, and final, development of recent years concerns the interpretation of the economy in the era of the Dutch Republic. The basic question can be put simply: was this a pre-modern economy, subject to the binding constraints that limited all societies before the Industrial Revolution, or was it a type of modern economy, perhaps the ‘First Modern Economy?’ If the former was the case, the economic achievements of the Dutch Republic were unavoidably fleeting and transitory, with no promise of things to come. In this spirit Violet Barbour concluded her chronicle of Amsterdam’s seventeenth century economic achievements by declaring them to be ‘rather the climax of a period of transition than the be-

18 Davis (1989), p. 49. Emphasis added.

19 This was the ‘proof’ offered by Simon Kuznets that ‘modern economic growth’ could not have characterized any economies before the nineteenth century (Kuznets (1965), pp. 69–70).

ginning of a new economic age.’²⁰ David Landes, in his *Wealth and Poverty of Nations*, uses only slightly more charitable words when he dismisses the Republic as ‘a hundred-year wonder.’²¹ Perhaps the best face that could be put on the Dutch economy from this vantage point was supplied by Adam Smith in his *Wealth of Nations*. The Netherlands, Smith wrote in 1776, had ‘acquired the full complement of riches which the nature of its soils and climate and its situation with respect to other countries, allowed it to acquire.’ It had accumulated capital to the point of driving profits close to zero, and could, he went on to conclude, advance no further.²² The Netherlands had reached the end of the line of economic development in a pre-industrial-revolution setting.

This position is now challenged. Foreshadowings of this challenge could be discerned in the treatment accorded to the economy of the Dutch Republic in the work of economists such as Douglass North and Angus Maddison. In *The Rise of the Western World* North and Robert Paul Thomas declared the Netherlands to be ‘the first country to achieve sustained economic growth as we have defined it...’ while Maddison saw it as the first of the three ‘lead economies’ that have pioneered the frontiers of technology and labor productivity over the past four centuries.²³ Such statements imply that the economy functioned outside the constraints that held other pre-industrial economies in thrall and that this condition was not the fleeting result of a fortuitous conjuncture.

This approach to the Dutch economy in the two centuries before the industrial revolution is pursued more thoroughly in Ad van der Woude and my *First Modern Economy*, where an effort was made to analyze its development with the conceptual tools applied to modern economies. This work revealed that technological improvements embodied in widespread capital investment acted to counteract the diminishing marginal returns in resource-based sectors, especially coastal agriculture. It also showed the scope of ‘Smithian’ growth, in domestic and foreign trade sectors alike, which augmented the efficiency with which resources were utilized. And, finally, it pointed to the ‘recentering’ of the European economy around the Amsterdam entrepot as a possible generator of increasing returns to scale in a multi-faceted commercial-industrial complex.

Taken together, these achievements created an economy capable of unreversed growth. It was certainly not the first example of impressive commercial, industrial, and agricultural progress in a regional setting. Northern Italy and the Southern Netherlands had, of course, also achieved progress of this type. But the scale and continuity of the Dutch experience represented a difference of degree that emerged to become a difference of kind.

20 Barbour (1963), p. 142.

21 Landes (1998), p. 408.

22 Smith (1937), book 1, chapter ix, p. 94.

23 North and Thomas (1973), p. 145; Maddison (1991), p. 30.

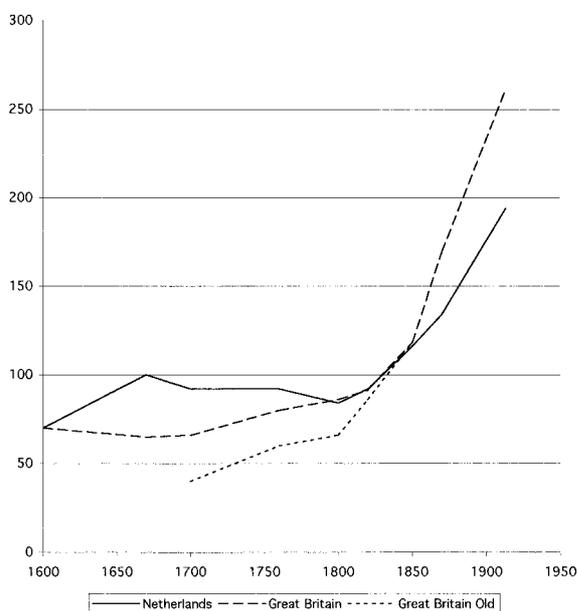


Figure 3 – New views of Dutch and British economic growth, 1600–1913
Dutch GDP, 1830 = 100

Sources: Netherlands: 1807–1913, see Figure 2. Before 1807, see Jan de Vries and Ad van der Woude, *The First Modern Economy*, Cambridge, 1997, pp. 706–710. Britain: From 1700: N.F.R. Crafts and C. Knick Harley, 'Output Growth and the British Industrial Revolution: A Restatement of the Crafts-Harley View,' *Economic History Review*, 45, 1992, pp. 703–730; Maddison, *Dynamic Forces*. Britain Old View, 1700–1830: Phyllis Deane and W.A. Cole, *British Economic Growth 1688–1959*, Cambridge, 1964.

When these three new developments in the economic history of the Netherlands and its immediate neighbors are brought together, the implications for long-term macroeconomic performance are intriguing. Figure 3 offers a new view on the course of GDP in the Netherlands and Great Britain. It incorporates the new estimates of Dutch nineteenth century growth, the revised estimates of British growth in the period 1700–1830, and a tentative sketch of the Dutch Republic's growth path in the seventeenth and eighteenth centuries.

3 THE COURSE OF THE DUTCH ECONOMY SINCE THE EARLY SIXTEENTH CENTURY

3.1 *The Golden Age*

On the face of things, the northern Netherlands that became the Dutch Republic would appear in the sixteenth century to have been a prime candidate for a future marked by Malthusian crises. In its inland reaches the soils rarely possessed high

natural fertility, and in the maritime zone changing hydrographic conditions placed increasing pressures on the population. Many had fled the rural areas in the preceding century, and the possibilities for arable agriculture were continuing to erode, making the region chronically dependent on imported grains. Yet, in the face of this unpromising environmental context, the Dutch population grew rapidly. Indeed, in the five centuries since 1500 it has grown 16-fold. In Europe only England and thinly populated Scandinavia approach this level of growth; the population growth of continental European countries over this interval generally range between 4- and 6-fold. The population of the Netherlands grew rapidly throughout the sixteenth century, and when general European growth flagged between 1620 and 1650, Dutch growth continued for several additional decades, until about 1670, when the population had doubled in size.

Until the 1570s the growing population was predominantly rural and suffered a succession of subsistence crises, variously the result of harvest failure, trade disruption, and warfare. The trend of real wages was persistently downward, as it

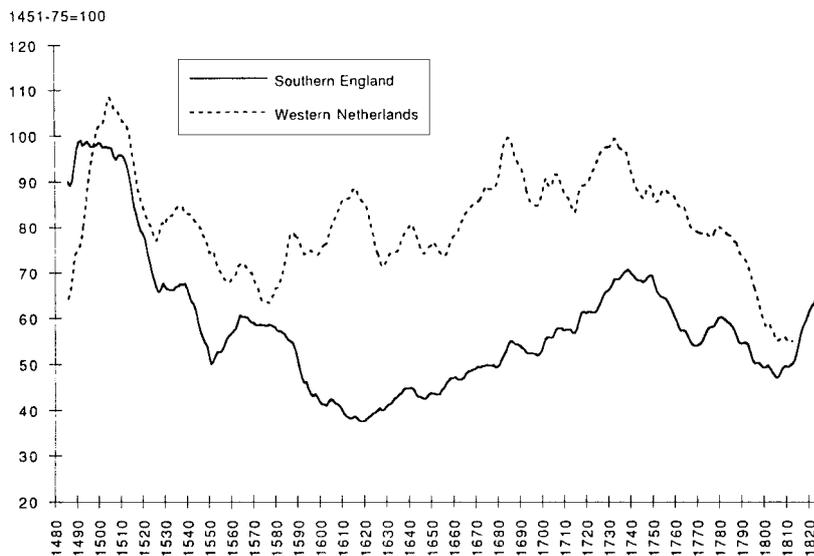


Figure 4 – Real wage indices for building craftsmen in Southern England and the Western Netherlands, 13-year moving averages

Sources: England: E.H. Phelps Brown and S.V. Hopkins, 'Seven Centuries of the Price of Consumables,' *Economica* 23, 1956, pp. 296–314. Netherlands: Jan de Vries, 'How Did Pre-Industrial Labour Markets Function?', in: George Grantham and Mary MacKinnon (eds.), *Labour Market Evolution*, London and New York, 1994, pp. 39–63.

was throughout Europe in this period of rising population and rising prices.²⁴ Real wages continued to decline in most of Europe until the mid-seventeenth century, when the trend of rising agricultural prices crested, but this was not the case in the Netherlands. Between 1580 and 1620 a large gap opened up between the real wages in Holland and those in England (and most of western Europe), a gap which began to be closed only after the mid-eighteenth century. Since agricultural price trends were similar in both countries, the difference in real wage experience is explained almost entirely by the frequent increases in nominal wages in Holland. This is our first sign that we are not dealing with a typical pre-industrial economy. What stands behind this pattern of wages?

The Malthusian model is based on the existence of sharply diminishing returns, which are most strongly felt in agriculture. The escape from this fate is thought to depend in large part on the shifting of the factors of production into sectors not subject to diminishing returns. And, indeed, the era in which real wages rose also witnessed a dramatic new phase of urbanization. In the century

TABLE 1 – URBANIZATION OF THE NETHERLANDS, 1300–1996 (POP. IN 000)

	urban population*	total population	percent urban	urban Δ /total Δ
1300	34	600**	5.6	
				40%
1550	312	1300	24.0	
				87
1675	878	1950	45.4	
				–10
1815	845	2290	36.9	
				44
1860	1290	3310	39.0	
				80
1996	10996	15494	71.0	

* The urban population is all towns of at least 2,500 population, except for 1996, when only municipalities of at least 20,000 are included. An alternative definition – all municipalities categorized as ‘mostly urban’ and ‘urban’ yields a similar result.

** The population of what would become the Netherlands is not known, even approximately, for this period. The figure offered here is a rough guess.

Sources: 1300: J.C. Visser (1985), *Historisch-geografisch tijdschrift*, 3, pp. 10–21; 1550–1860: Jan de Vries (1984), *European Urbanization*, London, p. 65, and sources cited there; 1991: Centraal Bureau voor de Statistiek (1996), *Bevolking der gemeenten van Nederland*, The Hague.

24 On real wages in the Netherlands see De Vries (1993); on real wages in Europe see Braudel and Spooner (1967).

after the 1570s the towns absorbed nearly 90 percent of the total growth of population, creating a complex network of urban places, and raising the total urban population to the unprecedented level of 45 percent of the Republic's total (and over 60 percent of Holland's).

This urbanization went hand in hand with a restructuring of the Dutch economy that made it the trading emporium of the world and endowed it with a diversified industrial sector. The most comprehensive indicator of the scope of this achievement in the non-agricultural sector is shown in Figure 5. Between 1580 and 1620, the most intense phase of this century-long process, the non-agricultural labor supply of Holland grew at the unprecedented rate of 3 percent per year.²⁵ This is represented in Figure 5 by a supply curve, *S*, and a second one *S'*, shifted to the right (whose shapes reflect the assumption that the offer of labor was largely independent of the wage level). A demand curve reflects the

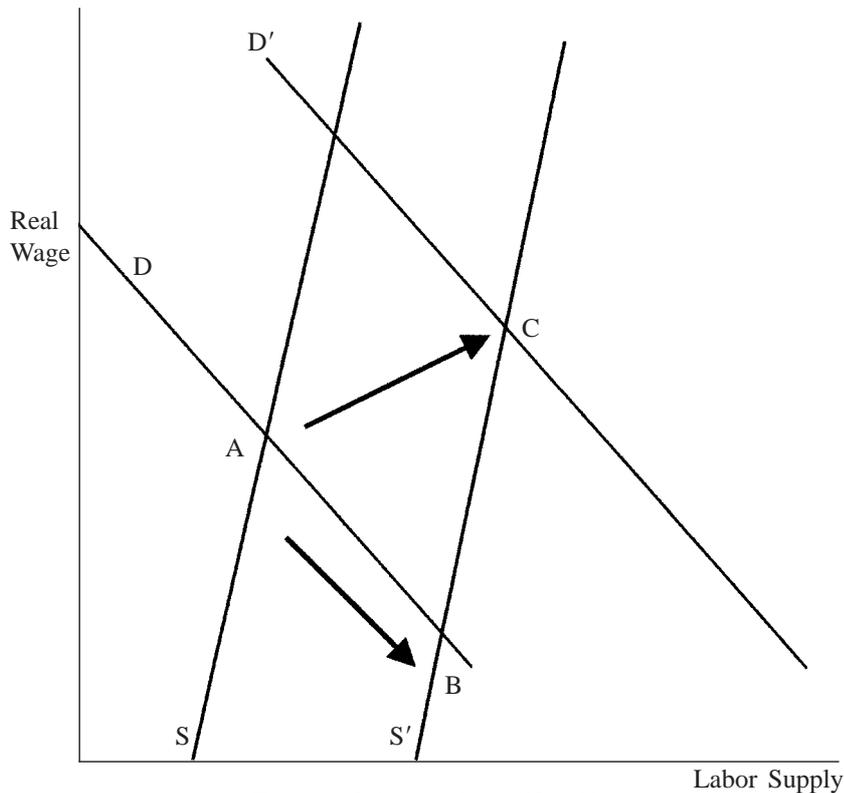


Figure 5 – Labour markets 1580–1620

25 De Vries (1993), p. 61. Non-rural population growth, adjusted by the increase in the length of the working year. No account is taken of change in labor force participation rates.

assumption of diminishing return. In a traditional Malthusian economy one would expect an explosive growth in labor supply to drive wages down (from A to B). But, as we have noted, non-agricultural wages did not decline in this period, they rose. The nominal wage for unskilled labor (most vulnerable in a setting of rapid population growth) rose from 5.5 *stuivers* per day in 1575–1579 to 14.5 *stuivers* in 1620–1624 (one *stuiver* equals 5 cents). Prices rose more slowly, leaving a real wage growth of at least 50 percent. In terms of Figure 5 Dutch labor did not slide down the demand curve to point B, but shifted to point C. The flood of new labor was more than matched by the expansive growth of employment opportunities as capital was invested across a broad range of commercial and industrial activities.

Here, again, a comprehensive indicator of the rightward shift of the demand curve must substitute for a detailed discussion: the rise of energy availability. In the 1650s the supply of heat energy per capita, drawn overwhelmingly from domestically produced peat, stood at approximately 3.0 million kcal, a very high figure for the time. A century earlier sketchier data suggest a figure closer to 1.0 million kcal per capita.²⁶ Kinetic energy supplies also increased, as the stock of industrial windmills and the fleet of sailing vessels grew rapidly in this period. Indeed, both the ocean-going carrying capacity and the supply of peat grew at the per capita rate of approximately one percent per annum over the century.

Finally, we can return to agriculture. The agricultural labor force grew very little in this era, as most of the rapid population growth was absorbed by the expanding cities, and by the growth of non-agricultural occupations in the countryside. Moreover, the period witnessed major investments in land reclamation, increasing the improved land area of the maritime region by some 25 percent. Consequently, the amount of land per worker in agriculture declined very little. The agricultural labor force fell to under 40 percent of the total by the 1660–1670s, giving each farmer more mouths to feed. The demands of industry for raw materials also rose. The Republic was a net food importer throughout this period, but this deficit did not increase, so that domestic production appears to have risen by some 80 percent, which translates to a rise in labor productivity of 0.4 percent per annum over the period 1510–1650/1675.²⁷

I have laid out the basis for considering the century after the 1570s as an era of long-term economic growth. While the rates of growth in most cases do not impress by twentieth century standards, they were unprecedented in their time for their rate, duration, and breadth. A summary estimate of GDP growth cannot safely be made from these and the other available data, but a 50 percent increase

26 Gerding (1995) offers data in support of the 3 million kcal figure. A century earlier production in the northern provinces, which accounted for half the total in the 1650s was close to zero, while production in the Holland-Utrecht area, about which less is known, was substantially less – perhaps half of what it would become. Moreover, a portion of this production was exported to the southern Netherlands, further reducing domestic supply.

27 For details, see de Vries and van der Woude (1997), pp. 232–234.

in per capita GDP (0.4% per annum, the rate of growth in labor productivity in agriculture) would seem to be a minimum figure.

3.2 *Economic Decline*

But, the skeptic might interrupt my song of praise at this point with the observation that this growth trajectory was not sustained, indeed, that almost every dimension of Dutch economic life showed reversals or stagnation for at least a century beginning in the 1670s. How could this be consistent with a modern economy?

The simple facts are these:

1. The population peaked in the 1670s; decline in Holland was roughly balanced by slight growth elsewhere, so that the population remained near its 1670 level as late as 1815. The Republic, with a population equal to 35 percent of England's as late as 1715, had only 21 percent of England's population in 1815, and 17 percent in 1870.

2. Urbanization, which stood at 45 percent in the 1670s, declined gradually, reaching 37 percent in 1815 (and little more than this as late as 1860). (See Table 1)

3. Nominal wages, which had risen frequently until the 1660s, remained essentially unchanged for the next two hundred years. Consequently, almost all real wage developments in this interval were the result of price movements. These caused real wages to rise, with interruptions, to the 1730s, but this rise was undone in the second half of the eighteenth century, culminating in a crisis as food costs rose during the Napoleonic period.

4. Energy supplies may have declined by some 15 percent in the century after 1650–1670. This was largely made good in the second half of the eighteenth century, but per capita energy use did not exceed the mid-seventeenth century level until the nineteenth century.

What can be said about GDP over this period of seeming stasis? There are clear examples of decline, and loss of leadership, (textiles, brewing, fishing, Baltic trade, domestic passenger transportation) but there were also sectors of new development (colonial trade, sugar refining, distilling, papermaking, tobacco). Agriculture, which contracted sharply after 1670, emerged to be a strong sector in the late eighteenth century, converting the Netherlands into the net agricultural exporter it has been ever since. The imperfect data available make it difficult to strike a balance of these divergent trends. There is little chance that real GDP per capita rose over the period 1670–1800, but tax data, foreign trade volume, and agricultural production estimates all suggest that the initial post-1670 decline was at least partially made good, leaving little if any net decline over the entire period.²⁸

28 Van Zanden (1987), de Vries (1981), pp. 245–273, Riley (1984), de Vries (1984).

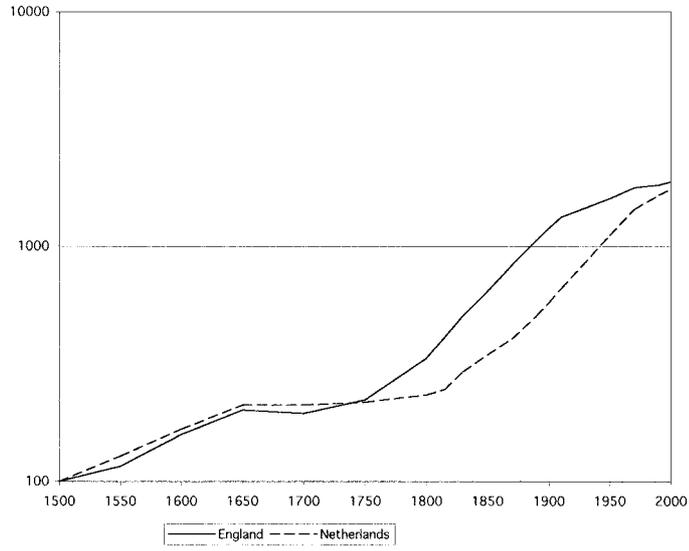


Figure 6a – Population of England and the Netherlands (1500 = 100)



Figure 6b – Netherlands population as percentage of English population

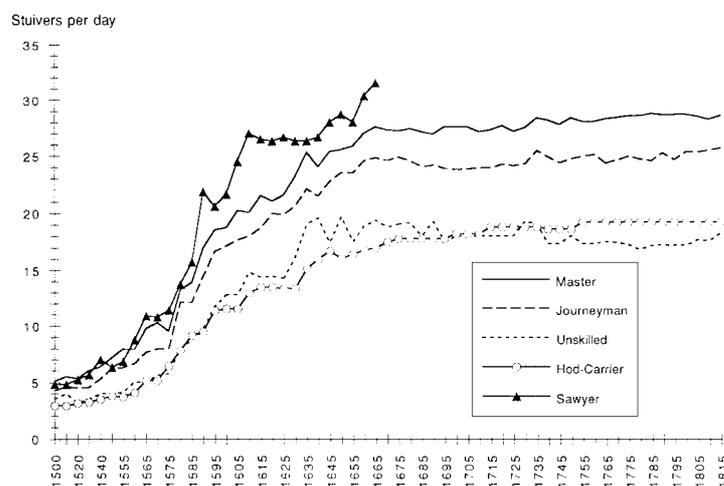


Figure 7 – Daily summer wage rates in the Western Netherlands, 1500–1815
Source: de Vries, 'Pre-Industrial Labour Markets,' p. 45.

For current purposes, the most important point is this: after over a century without net growth, the Dutch economy remained Europe's most urban society, with the smallest, most productive agricultural sector, and with the highest per capita income. Its crisis had not been a Malthusian reversal, undoing earlier gains, nor had its diminished political standing occasioned the fatal loss of an economic prosperity based on plunder and exploitation. Rather, the crisis faced by the Republic was a modern crisis of profit, employment, market access, and costs. Throughout, it retained its diversified economy and, most important, the 'social capability' required to participate in a modern economy.

A comparison with the British economy in the century after 1870 is instructive in this regard. Britain certainly remains a participant in modern economic growth today, yet it lost its position of technological leadership over a century ago.²⁹ What, then, allows Britain to remain in the ranks of 'modern economies?' The answer provides guidance to the interpretation of the Dutch economy after the 'Golden Age.' Britain and the Netherlands alike retained the institutions, human capital, and habits of mind to permit integration of and adaptation to the economic developments in the larger world of modern economies.³⁰ Thus, a century after sustained growth of the Dutch economy ceased (circa 1770–1780),

29 Indeed, Joel Mokyr, in his recent study of technological history, drew on Britain's experience to persuade his readers of the general truth of 'Cardwell's Law': that societies remain technologically creative only for a short period. Writing specifically of Britain he concluded: 'Sooner or later, in any given society, the progress of technology will grind to a halt. In a purely dialectical fashion, technical progress creates the forces that eventually destroy it,' Mokyr (1994), p. 251. See also Mokyr (1990).

30 Abramovitz (1986).

TABLE 2 – VALUE OF COMMODITY IMPORTS FROM ASIA AND THE WEST INDIES

annual average revenue, in thousands of guilders			
period	Asia	West Indies	approx. total
1670–1679	9,127	–	
1680–1689	10,446	[1–2,000]	12,000
1690–1699	12,736	–	
1700–1709	13,950	4,300	18,000
1710–1719	16,370	4,900	21,000
1720–1729	18,555	5,600	24,000
1730–1739	16,705	5,600	22,000
1740–1749	15,973	10,300	26,000
1750–1759	18,796	11,900	31,000
1760–1769	21,360	17,900	39,000
1770–1779	19,951	22,400	42,400

Sources: Asia (VOC revenues in Patria), de Vries and van der Woude, *First Modern Economy*, p. 444. West Indies (Surinam and Guyana), *First Modern Economy*, p. 478; (Curaçao and Sint Eustatius) Wim Klooster (1998), *Illicit Riches. Dutch Trade in the Caribbean, 1648–1795*, Leiden, p. 176.

average labor productivity in the Netherlands had yet to be exceeded by any other country; and a century after that (circa 1870–1880), well before modern industrialization had really taken root, per capita income in the Netherlands remained well within the range of the leading industrializing economies.³¹ All of this suggests to us that the Dutch economy retained what Moses Abromovitz referred to as the ‘social capability’ that was the mark of the modern economic system.³²

The comparison of Holland after its Golden Age with England after its Industrial Revolution is also instructive on other grounds. Both had experienced a decisive economic advance – the ‘golden age’ and the industrial revolution – that was ‘eruptive’ and possessed a site-specific, self-reinforcing quality. Such innovative economic growth necessarily undermines the linear growth model, since it redefines the terms for future growth. However, it also is accompanied by forces that lead to deceleration and relative decline in pre- and post- industrial revolution economies alike. Neither the Netherlands nor Britain found long-term growth after their initial transformations to be anything like a smooth or self-sustained

31 See Maddison (1991), Bairoch (1976). On the Dutch economy, see Richard Griffiths discussion of ‘stiekeme groei’ in his *Achterlijk, achter of anders?*

32 We discuss this issue further in de Vries and van der Woude (1996), pp. 324–326.

process.³³ Both encountered self-limiting forces, but in neither case were these forces Malthusian in character. Rather, they represented the long-term implications of sunk costs: of capital and institutional commitments that imposed a large degree of path dependence on the economy. Both the Netherlands in the eighteenth century and Britain beginning in the late nineteenth faced transitions between discrete states that had very high adjustment costs and necessarily required much time. Neither of these difficult transitions represented a society hitting a Malthusian ceiling, or attaining Smith's 'full complement of riches' allowed by nature. Rather they are early examples of a ubiquitous feature of modern economic life, operative at the sectoral, regional, and national levels.

3.3 *The Industrial Revolution and Nineteenth Century Growth*

This brings us to the era of the industrial revolution, an era in which the Dutch economy followed a very different path than Britain. Why, if Dutch society was so rich, diverse and competent, could it not also be dynamic? Questions of creativity are not easy to answer, but the following comparison may reveal a fruitful approach.

In the late eighteenth century both British and Dutch agriculture stood far above other countries in labor productivity, and in both there was little if any productivity gap between the agricultural and non-agricultural sectors.³⁴ The revised British GDP figures show only slow per capita growth in the period 1760–1830: 0.32 percent per annum (no more than the minimum estimate for Dutch growth in the 1580–1650 period). The Dutch economy over the period 1742 (when national income can be estimated on the basis of an income tax) to 1830 grew little if at all, yet the per capita income level appears to have been higher than the English throughout.³⁵ But, in this same period the *structure* of the British economy changed radically, while that of the Dutch economy changed at the pace of glacial drift. Indeed, the relative size of the three classic sectors had changed little from the late seventeenth century to the end of the nineteenth century.

In Britain structural change was massive, even though it would take several decades before this led to a pronounced acceleration of per capita GDP. Agriculture shrank from 53 to 41 percent of the male labor force between 1760 and

33 Wrigley (1988), pp. 16–17. Wrigley refers to 'an intriguing paradox:... No sooner had the industrial revolution taken place than the relative success began to evaporate, even though absolute progress continued.'

34 Van Zanden (1998) pp. 56–58. Joel Mokyr also makes this argument for the Netherlands, contrasting its agricultural sector with that of Belgium. In the north, the capital-labor ratio in agriculture was 82 percent higher and the amount of land per worker 44 percent greater (Mokyr (1976), pp. 198–202).

35 On 1742 see de Vries and van der Woude (1997), pp. 699–703. On 1830 and the comparison with Britain see Smits et al. (1997).

TABLE 3 – OCCUPATIONAL DISTRIBUTION: BRITAIN AND THE NETHERLANDS, 1675–1910

year	primary sector				secondary sector			
	Britain		Netherlands		Britain		Netherlands	
1675			38					
1700	61				19			
1750			41				32	
1760	53				24			
1800	41	36	41	43	30	30	26	32
1840	29	22			47	41		
1850		19		40		43		31
1880		13				44		
1890				37				32
1910		8		30		46		34

Sources: Britain. To 1840, Male employment only: N.F.R. Crafts (1994), 'The Industrial Revolution,' in: R. Floud and D.N. McCloskey (eds.), *The Economic History of Britain since 1700*, Cambridge, p. 45. From 1800: P. Deane and W.A. Cole (1969), *British Economic Growth, 1688–1959*, Cambridge.

Netherlands. To 1800: Jan de Vries and Ad van der Woude (1997), *Modern Economy*, Cambridge, pp. 233, 524. From 1800: J.P. Smits, E. Horlings, and J.L. van Zanden (1997), 'The Measurement of Gross National Product and its Components. The Netherlands, 1800–1913,' N.W. Posthumus Institute Research Memorandum, No. 1, (February), Table 1.5.

1800 – reaching the Dutch level – and then on to 28 percent by 1840. Most of the difference went to swell the size of the industrial sector, which rose from 24 to 30 percent in 1800 – again, reaching the Dutch level, and further to 47 percent by 1840.³⁶ What can account for this difference in structural change? The British population was growing after 1720, and this growth accelerated as the century wore on. By 1760 Britain, which had been a major agricultural exporter, became a net importer of foodstuffs, which it has ever since remained. The population of England doubled between 1720 and 1815, and doubled again between 1815 and 1870. Seen from a general equilibrium perspective, the financing of the growing volume of agricultural imports required for this growing population put pressure on Britain's external accounts. It is in this setting that industrial exports rose – had to rise, one might say. Some of these export industries experienced significant technological change; some others could succeed as exporters only by keeping labor costs low. But the pressure of population change in the context of Brit-

³⁶ Crafts (1994), p. 45.

ain's external balances pushed the economy away from agriculture and toward industry, even though productivity in the two sectors was initially comparable.³⁷

The Dutch economy felt no similar stimulus. Its population growth was uniquely slow in the period 1750–1815 (14 percent, compared to Britain's 85 percent), and this emerges as an important factor in determining the path of its economic development. In the Dutch environment the productive agricultural sector actually grew rather than shrank, as it became a major exporter to the British market. The economy could long continue to rely on a mix of agriculture, commercial services, and a few industries to achieve the *stiekeme groei* of the nineteenth century. This was an adequate basis for substantial nineteenth century growth, just as it had been for seventeenth century growth. However, the partial deindustrialization – by itself arguably an outward sign of an enviable prosperity – proved to be more than an ordinary weakness. It ensured that the Netherlands would play no significant role in developing those technologies via the 'learning-by-doing' processes that were essential in that empirical age, and it would have to relinquish its place at the productivity frontier that it had held since it launched its modern growth.³⁸

The very much more successful Dutch economic performance of the past century occurred under the star of the 'second industrial revolution' where technological diffusion occurred under different auspices than in the first, and where the 'social capability' assembled over a long time period could be put more effectively to use than a century earlier. It also occurred in a context of very rapid population growth. (The Dutch population equaled only 17 percent of England's in 1870, but stands today at 33 percent, near the ratio obtaining in the seventeenth century.) This disturbed the extraordinary structural stability of the economy, helping to create new openings for innovative initiatives. In this and several other ways a new day was dawning for the Dutch economy. But this new day was not the *beginning* of modern economic growth; it can better be seen as a *second round* of growth. This country never passed through the eye of the needle that was the British Industrial Revolution, and which long has defined the nature of a modern economy for the entire world.³⁹ Despite this, it grew, which suggests that a more expansive concept of economic growth is needed.

4 CONCLUSIONS

1. The Netherlands is a classic example of a small open economy and it has held these characteristics for a long time. Yet, over a very long time span its devel-

37 Harley and Crafts (2000).

38 On productivity frontiers and the concept of the 'lead economy' see Maddison (1991), pp. 30–47.

39 Even revisionists on the British Industrial Revolution continue to think along these lines: 'The British Industrial Revolution coincided with the beginning of sustained growth of per capital income in modern economies.' This is the opening sentence of Harley and Crafts, 'Productivity Growth.'

opment has varied significantly from its neighbors in timing and structure. Its path to modernity was not that of its neighbors; or to put it more ecumenically, Dutch participation in a generalized western modernization occurred contrapuntally, as creative, self-reinforcing phases of development – which influenced economic well being far beyond its borders – alternated with periods of relative decline, where economic betterment tended to be imported from elsewhere via trade. The intensified integration into the economy of the European Union may well diminish this distinctiveness in obvious ways, but one can question whether even this can erode those characteristics that have deep historical roots, and that cast their shadow forward, even into the present.

2. The concept of modern economic growth. The modern economic history of the Netherlands did not begin in the nineteenth century. The position held by the British industrial revolution and by the French political revolution as twin gatekeepers to the modern world has long prevented a clear view of important lines of continuity that span the eighteenth and nineteenth centuries. This is not a problem unique to Dutch historiography, but it is of particular importance to the Netherlands for here, more clearly than anywhere else, an essentially modern economic life had been established by the seventeenth century. Cutting this experience off from analyses of the past two centuries has led to misinterpretation of the Dutch past, but it also contributes to a misunderstanding of the character of modern economic growth.⁴⁰

Economics is too much wedded to a Kuznetzian definition of sustained, linear economic growth that is an artifact of a specific intellectual (and economic) era. Drawing on the long term Dutch experience, I want to advocate a model of modern growth that is more historical and shorn of its modernist rigidities. At the same time, it is necessary to revise the neo-Malthusian model generally applied to the pre-industrial era to make it more economic: that is, attentive to the growth potentials of the times. I do not hereby intend to deny the large difference in the pace and scope of economic growth in the two epochs, but rather want to encourage a less stylized and more penetrating account of how growth could be, and hence can be, achieved, and how economic retardation is directly related to the process of growth itself.

Much of economic life is subject to diminishing marginal returns, in the past as in the present. Constant returns to scale certainly is adequate for much as well, while another class of economic phenomena – its size is what is really at issue now – is subject to increasing returns. We possess economic models that rely on each of these, but they are either presented as *rival* models, or are viewed as *sequentially* applicable, governing the economic life of successive historical epochs.

40 A fuller presentation of my position is presented in de Vries (forthcoming).

A more historical approach would see them as simultaneously, or at least latently, present and potentially interactive.⁴¹ Their relative weights have certainly changed over time, since the depth and breadth of market information and communication directly affect those weights, but all three dynamic processes – Malthusian, Smithian and Schumpeterian, as William Parker labeled them – existed in both the pre-industrial past and the modern present.⁴² A single, integrated model developed in this spirit could supply a common vocabulary to study economic growth both before and after the industrial revolution. And, it would move us away from models of linearity and convergence toward a mixed pattern of discontinuous growth and deceleration – of ‘rounds of growth,’ as the Dutch title of *First Modern Economy* puts it.⁴³

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41 Consider the recent article of Becker et al. (1999), pp. 145–149. They acknowledge the existence of Malthusian mechanisms where population growth tends to lower per capita incomes, which ‘tend to prevail in poorer, mainly agricultural, economies...’ and contrast these with ‘modern urban economies with small agricultural and natural-resource sectors’ where ‘these Malthusian effects would be much weaker.’ Here increased population density promotes specialization, investment in human capital, and rapid accumulation of new knowledge. In short, increasing returns have the effect of counteracting the influence of diminishing returns. They describe the problem as modeling the transition from the first to the second type of economy. In truth, any economy (excepting a city state, or enclave) consists of urban and rural sectors, of dense and sparsely settled zones, of settings conducive to increasing returns and those heavily constrained by natural resources. The real task is to model the interactions of such economies rather than to insist rigidly on sequences of pure and discrete regimes.

42 Parker (1984), p. 191. ‘These three expansionary processes are not conceived wholly as stages, and do not follow each other in linear sequence over the historical record. All three are tendencies continuously active.’

43 The Dutch edition of *First Modern Economy: Nederland 1500–1815. De eerste ronde van moderne economische groei* (The Netherlands, 1500–1815. The First Round of Modern Economic Growth), Amsterdam, 1995.

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