

THE DUTCH    
  ECONOMY   
 IN THE    
  GOLDEN AGE

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THE DUTCH ECONOMY IN THE GOLDEN AGE



# **THE DUTCH ECONOMY IN THE GOLDEN AGE**

Nine Studies

Karel Davids and Leo Noordegraaf (eds.)

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# CONTENTS

I.	Introduction, <i>by Karel Davids and Leo Noordegraaf</i>	1
II.	Economic growth in the Golden Age: the development of the economy of Holland, 1500-1650, <i>by Jan Luiten van Zanden</i>	5
III.	The role of the entrepreneur in the economic expansion of the Dutch Republic, <i>by P.W. Klein and Jan Willem Veluwenkamp</i>	27
IV.	The labour market, <i>by Jan de Vries</i>	55
V.	Technological change and the economic expansion of the Dutch Republic, 1580-1680, <i>by Karel Davids</i>	79
VI.	Freedom and restrictions. State and economy in the Dutch Republic, 1570-1670, <i>by Marjolein 't Hart</i>	105
VII.	Dutch industry in the Golden Age, <i>by Leo Noordegraaf</i>	131
VIII.	Dutch agriculture in the Golden Age, 1570-1660, <i>by Jan Bieleman</i>	159
IX.	Intraregional trade and the port system in Holland, 1400-1700, <i>by Clé Lesger</i>	186
X.	Foreign trade of the Dutch Republic in the seventeenth century, <i>by J.Thomas Lindblad</i>	219
	Bibliography	251
	Contributors	279



# I

## INTRODUCTION

by

*Karel Davids and Leo Noordegraaf*

In a survey on economic historiography in the Netherlands published in 1989, Jan Luiten van Zanden remarks that the period 1500-1650 received far less attention from Dutch economic historians during the past few decades than it did before 1960. The issue of the expansion of the Dutch economy up to the middle of the seventeenth century no longer ranks as prominently among topics considered worthy of theoretical reflection and empirical research as it did when the discipline of economic history was still in its infancy<sup>1</sup>.

This volume does not represent a new synthesis of scholarship on this period. It is not a new textbook. Its aim is more modest: to stimulate interest in the problem of the expansion of the Dutch economy in the early modern era by offering a variety of studies on key aspects of economic life at the time<sup>2</sup>. The nine essays included in this volume all centre on the period of relatively rapid growth, which is generally taken to have ended somewhere between 1650 and 1680. The starting-point chosen by the authors is not always the same. In a number of essays – notably those by Van Zanden, De Vries, Noordegraaf en Lesger – the long-term view is extended to comprise the entire sixteenth century or even a large part of the fifteenth century. Other authors have taken their starting-point in the last quarter of the sixteenth century with the outbreak of the Dutch Revolt and the establishment of the Dutch Republic, which also had far-reaching consequences for the development of the economy. What most of the nine essays have in common, though, is their interest in the issue of continuity, or discontinuity, between economic development during the Republic and in the period that went before it.

The geographical area covered in these studies is the whole territory of what after the 1580s came to constitute the Dutch Republic, otherwise known as the United Provinces or the Northern Netherlands. Only Van Zanden and Lesger for reasons of principle or because of the nature of the source material have chosen

to focus on developments in one particular part of this area, namely the province of Holland.

The contribution by Van Zanden, which opens this volume, provides an overview of the evidence at hand on the growth of output in Holland between 1500 and 1650 and the extent to which it benefited capital and labour. The next four articles look into various sources of growth in the Republic at large, viz. the role of the entrepreneur, the development of the labour market, the advance of technology and the impact of government policies. The last four contributions deal with four different sectors of the Dutch economy: industry, agriculture, intraregional trade and foreign trade.

This survey of sources and sectors can of course not be regarded as exhaustive. The volume does for instance not include separate pieces on capital accumulation, natural resources or population growth, nor special contributions on such important sectors of the economy as herring fishing, whaling, the shipping industry or domestic services. Most of these topics, on the other hand, receive at least some attention, from various points of view, in one or more of the essays on other sources or sectors of growth. Capital accumulation, for example, is treated by Van Zanden, Klein and Veluwenkamp and Noordegraaf, natural resources by Davids and Bieleman and population growth by Bieleman<sup>3</sup>, while herring fishing, whaling and the shipping industry come up for discussion in the articles by Davids, 't Hart, Lesger, Lindblad and Van Zanden and the role of domestic services is briefly considered by De Vries.

Readers will notice that the authors use a wide array of conceptual tools, ranging from Von Thünen's fields of force and geographers' models of port systems down to Schumpeterian ideas on entrepreneurship and key notions borrowed from theories of political economy. These tools, moreover, are employed in different ways, depending on whether the author primarily aims at synthesis, analysis or recasting the statement of problems. Variations in emphasis notwithstanding, all the authors have striven to give an up-to-date summary of the state of inquiry on their subject, to signal important problems for further research and to assess – as far as the evidence permits – the contribution of the particular source or sector of growth they are dealing with to the overall economic expansion of the Dutch Republic.

The picture emerging from these studies is that of broad-based economic growth which, though accelerating after the 1580s, in many respects rested on foundations laid well before the outbreak of the Dutch Revolt. The expansion manifested itself in agriculture, herring fishing, foreign commerce and the shipping industry, as well as in industry, domestic trade and energy production. While the importance of the influx of capital and skills from the Southern Netherlands in the late sixteenth century is rightly underscored by a number of authors<sup>4</sup>, it is also evident that the economy of the North had seen striking changes even before the effects of the Revolt came into the equation. There had already been a significant increase

in agricultural productivity, growth of a large and flexible labour market, growth of a port system, a vast expansion of bulk trades with the Baltic region, an increase in energy production, a rise of new forms of industrial organization and a development of novel arrangements in public finance – to name but the most essential transformations highlighted in this volume.

What the period after 1580 added to this, apart from an increased accumulation of capital and an impressive clustering of entrepreneurial talent, was particularly an accelerated advance of technology in many sectors of the economy, an increased interweaving of the rural economy of the inland provinces with the more urban economy of the coastal region, a huge expansion in demand and supply of labour and growth of a segmented labour market, development of an intraregional transport system, the rise of a variety of 'rich' trades, a renewed surge of industry and an extension of public facilities and policies in support of economic growth. The authors agree that the Revolt and the coming of the Republic was, in a sense, indeed a watershed in Dutch economic history. Economic expansion after the 1580s was to no small extent favoured by intervening political and institutional changes<sup>5</sup>. Thus, the essays in this volume on the economy of the Netherlands in the Golden Age ultimately point to the need to 'bring politics back in'.

## NOTES

- 1 J.L. van Zanden, 'The Dutch economic history of the period 1500-1940; A review of the present state of affairs', *Economic and Social History in the Netherlands* 1 (1989) 9-29; 11, 13-15. It should be pointed out, however, that Van Zanden also rightly draws attention to the epoch-making studies published by, among others, members of the 'Wageningen School', P.W. Klein and Jan de Vries.
- 2 We wish to thank Mrs. R. de Coursey for correcting the English of all contributions included in this volume (except the article by De Vries).
- 3 The classic study is: J.A. Faber *et al.*, 'Population changes and economic developments in the Netherlands; A historical survey', *AAG Bijdragen* 12 (1965) 47-113.
- 4 Notably in the contributions by Klein and Veluwenkamp, Davids and Noordegraaf.
- 5 As argued in this volume especially by 't Hart, Klein and Veluwenkamp, Davids and Noordegraaf.



## II

### ECONOMIC GROWTH IN THE GOLDEN AGE THE DEVELOPMENT OF THE ECONOMY OF HOLLAND, 1500-1650\*

by

*Jan Luiten van Zanden*

#### *1. Introduction*

There can be no doubt that the economy of Holland expanded rapidly between 1500 and 1650, and particularly after 1580. This expansion gave Holland a central, perhaps even dominant, position in the world economy during the mid seventeenth century. However, the extent to which the economy grew has not as yet been studied extensively. How rapid was economic growth? In what sectors was growth concentrated? What was the relationship between growth of output and population growth? Did per capita income also increase? What were the sources of economic growth; how important were technical developments, capital accumulation, and processes of specialization and structural change in the economy? Who benefited from growth – labour, capital, or mainly the government?

Such questions have rarely been subject to systematic investigation by historians. One exception is Jan de Vries's study of the development of Dutch agriculture; De Vries is one of the few to analyse economic development during this period in terms of modern theories of economic growth.<sup>1</sup> In the present essay I provide an outline of the character of economic growth in Holland by first examining how output changed between 1500 and 1650. For practical reasons, and because of the nature of the sources available, changes in output and/or in real value added for the most important sectors of the economy can be reconstructed at only three points, c. 1500, c. 1580, and c. 1650. The estimates presented are preliminary, and much more work is required in order to arrive at more definitive and detailed figures. This study does not pretend to offer more than an outline of the available material and, where possible, initial conclusions based on this

material. My intention is to identify the long-term changes that have occurred in the Dutch economy.

After presenting estimates of changes in gross output in section 2, I explore the relationship between the process of economic growth and two factors of production – labour and capital. Wage levels between 1500 and 1650 are examined on the basis of existing studies, and then the pattern of capital accumulation is analysed. Sources enable rough estimates to be made of the capital wealth of individuals at three points in time (1500, 1650, and 1790), and these offer some insight into the process of growth in this period and to what extent economic growth benefited labour and capital. I conclude by summarizing some aspects of economic growth in Holland during the early modern period.

The importance of the period 1500-1650 in the subsequent economic development of the province of Holland can be gleaned from the fact that around 1800 per capita income in the Netherlands, and especially in Holland, was still significantly higher than in neighbouring countries – even higher perhaps than in Great Britain.<sup>2</sup> This feature must have originated before 1650, because per capita output stagnated in Holland between 1650 and 1800.<sup>3</sup> Prior to 1650 therefore there must have been a period of intense growth which raised per capita income above those in the rest of western Europe; the literature suggests that the most likely period was 1580-1650.<sup>4</sup> The question is: when did the economic development of Holland begin to deviate so remarkably from that of the rest of western Europe?

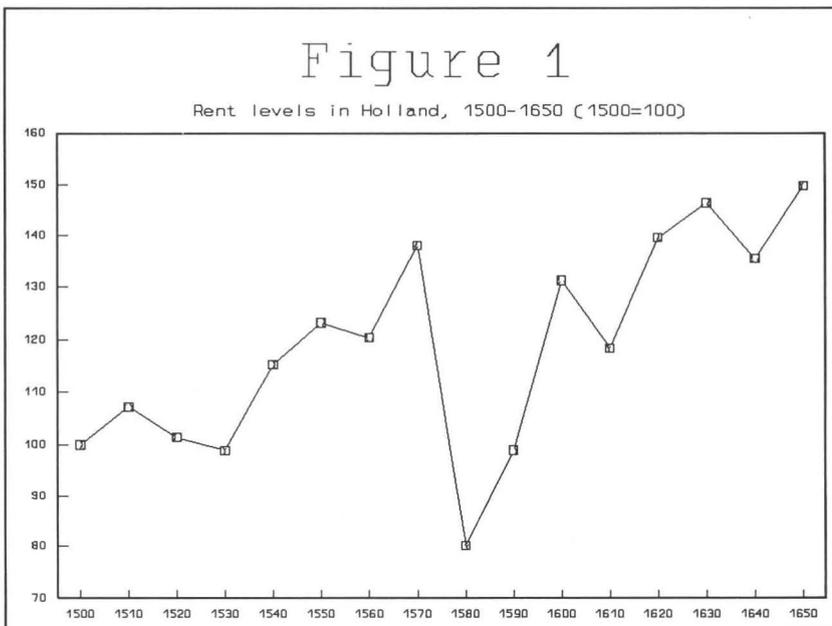
## 2. *Growth in production*

### *Agriculture*

The area of land under cultivation can be estimated by using the cadastral surveys of 1832 and deducting the area of land reclaimed in the years previously. The results are presented in Table 1 and broadly accord with contemporary estimates; the *verpondingskohier* of 1632, for instance, gives a figure of 386,000 *morgen* (about 325,000 ha), which is similar to the figures given in Table 1.<sup>5</sup> Estimates of the area of land under cultivation at the beginning of the sixteenth century are generally much lower. Using the *Informacie*,<sup>6</sup> for example, Naber arrives at a figure of about 275,000 *morgen* within the present borders of Holland; it is well known, however, that the *Informacie* understates the area of land under cultivation.<sup>7</sup>

Estimating the increase in agricultural productivity is much more difficult. Kuys and Schoenmakers' analysis of leases in Holland between 1500 and 1650 provides much valuable material, but there are a number of problems associated with the data they present. Firstly, their data on the average cost of leaseholds suggest a rise much more rapid than the separate complete series of data they present for Rijnsburg, Leewenhorst, and Haarlem; this must have resulted from changes in

the composition of the stock on which their averages are based.<sup>8</sup> In order to correct for this, we have used only the unweighted average of the three complete series (for Rijnsburg, Leewenhorst, and Haarlem). These series were then deflated by the unweighted average of wheat and butter prices in Utrecht and Leiden in the period 1490-1499 to 1640-1649 (1490/99 and 1500 = 100).<sup>9</sup> We assumed here that rents were determined by agricultural prices in the previous decade; thus, rents in 1510 were deflated by agricultural prices in the period 1500-1509, and so on. The results are presented in Figure 1. It would appear that rents in 1580 were 20% higher in real terms than those in 1500; the corresponding figure for 1650 was about 50%. We have further assumed that real rents per *morgen* provide an indication of the growth in real value added per *morgen*.<sup>10</sup> Using the same method, Jan de Vries has similarly concluded that agricultural productivity during the Golden Age must have increased considerably.<sup>11</sup> Our estimates suggest that between 1500 and 1650 total output in agriculture increased by about 80% (Table 1), and it is likely that, because of an accelerated increase in the amount of land under cultivation and the rise in yields after 1580, the increase in agricultural output was also mainly concentrated in the second half of this period.



### *Herring fishing*

The scale of herring fishing can be estimated from the number of herring busses in Holland. Kranenburg's data, relating to the years 1571 and 1586, suggest that

there were between 400 and 450 in that period.<sup>12</sup> For the years 1630-1650 he estimates the corresponding figure to have been around 500. Willemsen's estimate, based on new data relating to the size of the Enkhuizen fleet, puts the number of busses at nearer 600.<sup>13</sup> The *Informacie* shows that the following number of busses put to sea in 1514: 63 from Rotterdam (50 of which came from elsewhere, especially Waterland), 40 from Delfshaven, 20 from Schiedam, and a number of others from the fishing ports along the North Sea coast (Katwijk, Egmond, Zandvoort).<sup>14</sup> It is remarkable that no mention is made of Enkhuizen here; the first occasion on which the town was referred to was in the 1550s, when 140 busses are said to have sailed from the port.<sup>15</sup> Allowing for certain inaccuracies and the lack of data for Brielle, the number of herring busses in 1514 can be estimated at around 200. In 1477 there were probably around 250 busses (with a total crew of 6,000) in Holland and Zeeland,<sup>16</sup> which is consistent with our estimate for 1514. The increase in the number of busses in the sixteenth century can be attributed almost entirely to the growth of Enkhuizen; by 1630 around 300 busses sailed from Enkhuizen every year.

#### *The merchant fleet and international trade*

Several estimates of the size of the merchant fleet are available from various sources. These suggest that the fleet grew tenfold between 1500 and 1650 (Table 2). The first period of growth occurred between 1530 and 1567 and was mainly the result expanding trade with the Baltic. Imports of wheat from the Baltic increased from 10,000 lasts (20,000 tonnes) around 1500 to an annual average of 60,000 lasts (120,000 tonnes) in the period 1562-1565.<sup>17</sup> The second period of growth – from about 1585 onwards – led to the size of the merchant fleet more than doubling and to considerable diversification into other trading areas. Until about 1580 an estimated 50% of the fleet was involved in the *moedernegotie*, or mother trade, as the Dutch grain trade with the Baltic was termed; this proportion had fallen to below 25% by 1636 because of the rise of the VOC (Dutch East India Company) and the WIC (West India Company) and the growth of the Mediterranean trade.<sup>18</sup>

It is likely that the volume of international trade increased to a similar extent as the size of the merchant fleet.<sup>19</sup> This assumption may overstate the growth in international trade somewhat, however, because after 1580 trade with the Southern Netherlands, which was partly carried by river ships and barges, stagnated, and because trade with the German hinterland declined as a result of the Thirty Years War. On the other hand, according to Jonathan Israel, the main focus of Dutch international trade shifted from bulk trades to 'rich' (luxury) trades.<sup>20</sup> The increase in the value of trade may therefore have been much greater than the increase in the volume of trade. It seems reasonable then to maintain that the development of international trade and the growth of the merchant navy paralleled one another.

### *Industry*

The most difficult aspect of economic growth to assess is the pattern of industrial change. Extensive quantitative data are available only for the two most important export industries, brewing and textiles; for the years after 1590 soap production can be estimated, and data on growth in the size of the merchant fleet can be used indirectly to estimate growth in the shipbuilding industry. This is sufficient to enable us to draw conclusions about the long-term development of industry between 1500 and 1580, since industrial production in Holland was dominated by these industries. This was not the case after 1580: the period 1580 to 1650 was one of industrial diversification, with the rise of new (often harbour-related) industries (sugar refining, diamond cutting, paper making, printing, the silk industry, delftware).<sup>21</sup> Many of these new industries produced luxury products for the flourishing home market or were dependent on the expansion of international trade (mainly through the entrepôt of Amsterdam). In many cases the rise of a new industry was the direct consequence of the immigration of entrepreneurs and highly skilled craftsmen, particularly from Antwerp. Unfortunately, data on the growth of these new industries are lacking, and we are restricted to analysing the growth in the traditional export industries mentioned above (brewing and textiles). As a result, industrial growth in the period after 1580 has undoubtedly been significantly underestimated.

On the basis of the *Informacie*, Posthumus estimated total textile production in Holland to be 51,500 pieces in 1514; about half of this, 26,000 pieces, was produced in Leiden (and a further 9,000 pieces in Naarden, then the second most important textile centre in Holland).<sup>22</sup> His study of the Leiden textile industry shows that textile production in Leiden fell sharply between 1520 and 1570; in 1570 only 3,800 *lakens* were produced.<sup>23</sup> This decline was repeated in other cities too, and, as far as we can tell, to a similar extent.<sup>24</sup> In Amsterdam, however, textile production declined only after 1550, but here too it was rapid.<sup>25</sup> For this reason, it is probably realistic to suggest that total textile production in Holland around 1580 did not exceed 10,000 pieces.

There were two phases in the revival of the textile industry after 1580. Between 1580 and 1630 the woollen industry recovered in a number of cities (Haarlem, Gouda, Leiden, Delft, and Alkmaar) thanks to the migration of Flemish textile workers to Holland and the consequent introduction of the 'new draperies'. The second phase, between 1630 and 1670, was characterized by continuous growth in the Leiden textile industry and the sharp decline of the woollen industry outside Leiden. In Gouda, Haarlem, and Alkmaar hardly anything remained of the new draperies that had been introduced there around 1590.<sup>26</sup> As Posthumus has shown, by 1650 these developments led to the woollen industry being almost entirely concentrated in Leiden.<sup>27</sup> On the basis of his data, the proportion of woollen fabrics produced in Leiden can be estimated to have been at least 85 to 90% of total production, which was on the order of 100,000 to 110,000 pieces, 21,000 of which

were high-quality *lakens*.<sup>28</sup> This is around twice the corresponding level of production at the beginning of the sixteenth century. A considerable proportion of these 100,000 pieces consisted of serges, bays, and the like, the price of which was much lower than that of *lakens*. But around 1500, a significant proportion of total production also consisted of cheap *lakens* produced in Naarden and Hoorn.<sup>29</sup> It is not clear then that the average value of woollen fabrics declined between 1500 and 1650.

How breweries fared can be reconstructed from a variety of sources on account of the numerous duties levied on beer. Most research has concentrated on production in the three large beer-exporting cities of Haarlem, Gouda and Delft. In the sixteenth century these cities accounted for most of the beer produced. Table 3 shows that total beer production fell prior to 1570, a consequence of a continuing fall in beer exports (though domestic consumption probably rose because of the increase in population). In the sixteenth century Dutch beer exporters faced a declining market on account of the expansion of brewing in the Southern Netherlands.<sup>30</sup> Only in Delft did brewers maintain their share of the market in the Southern Netherlands – in Haarlem and Gouda their market share quickly declined (Table 3).

The 1570s and 1580s were also disastrous for brewers; Delft lost its foothold in the Southern Netherlands, and only in Haarlem was there evidence of recovery, because of the expansion of domestic demand. In the period after 1590 Amsterdam and Rotterdam became important brewing centres. By then beer was no longer an important export, and the northern part of Holland and Friesland became Haarlem's most important markets.<sup>31</sup>

Around 1500 total beer production amounted to between 1 and 1.1 million *vaten*; by 1590 this had fallen to 650,000.<sup>32</sup> An estimate for 1651 of about 950,000 *vaten* seems reasonable, and it is likely then that total beer production fell between 1500 and 1650.

Growth in the shipbuilding industry cannot be calculated directly, but a rough idea is provided by the growth in the size of the merchant fleet. It is probably fair to assume that the shipbuilding industry expanded in parallel with the growth of the merchant fleet.<sup>33</sup>

Some data are available on the level of soap production. These suggest that the industry hardly grew at all between 1590 and 1650. Data on the yield of soap duties (12 *stuiver* per *ton* of soap) imply that annual output was about 45,000 *ton* in 1590-1591, 42,000 *ton* in 1608, and that it rose to 48,000 *ton* by 1650-1659 – hardly an example of dynamic growth.<sup>34</sup>

#### *Total output*

Although the statistical basis of the estimates presented above is narrow, it is nonetheless useful to try and summarize the apparent trends in order to give an indication of the change in per capita output in the periods 1500-1580 and

1580-1650. These figures are of course bound to have a wide margin of error given the nature of the data.

In the analysis I have tried to estimate the relative size of different sectors in the economy on the basis of the numbers employed in these sectors as a proportion of total employment. Two series of weights – one for c. 1500 and one for c. 1650<sup>35</sup> – have been calculated using what we know about employment patterns in different sectors in these two years. The results are given in Table 4. They show that it is unlikely that per capita output increased significantly between 1500 and 1580; the spectacular growth in international services and the expansion of herring fishing was largely offset by the marked decline in export industries. On balance, the economy probably grew, but only at the same rate as the population. In contrast, per capita output undoubtedly rose after 1580, despite more rapid population growth. The increase in agricultural output, in herring fishing, and in brewing was less than the rate of population growth, but expansion in other sectors – textiles and international services – was much greater. Furthermore, these data underestimate the level of industrial growth, for the reasons outlined above, so that real per capita output grew by more than 0.3% a year, and perhaps even by twice that figure.

When we consider the entire period 1500-1650, it is apparent – and hardly surprising – that the most dynamic sector was international services; this was paralleled by a similar expansion in the shipbuilding industry. Of the remaining sectors of the economy, only herring fishing grew as rapidly as the population.

The picture is diverse therefore. When we look at absolute growth figures, there appears to have been a process of continuous economic expansion remarkable for a pre-industrial economy; when we take into account the growth in population, however, then it is apparent that there was only a modest increase in per capita output. Clearly this provides no sufficient explanation for the high level of per capita GDP in Holland during the early modern period.

### *3. Labour and capital*

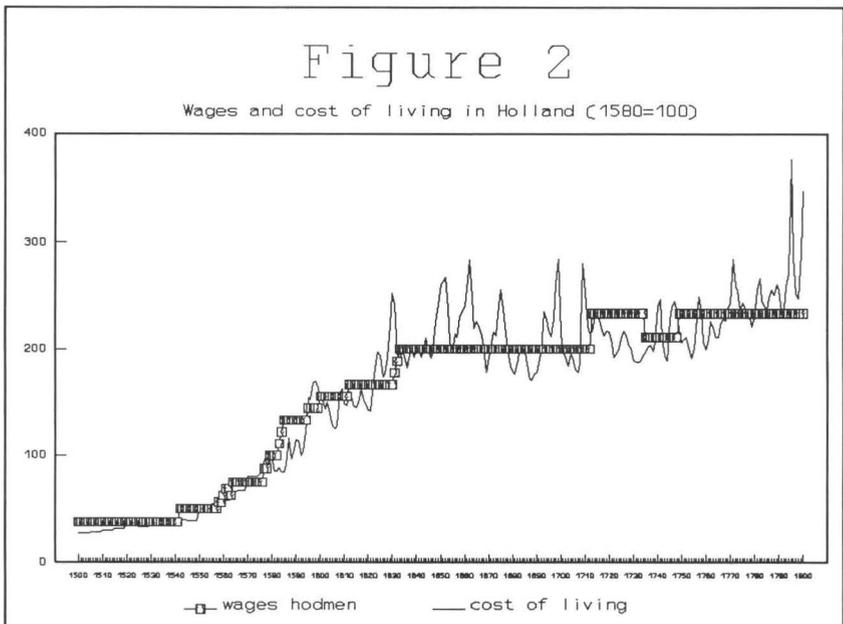
#### *Real wages*

Who profited from economic growth in the period 1500-1650? The process of economic growth in western Europe during the nineteenth century gave rise to a sustained increase in real wages and in the standard of living of the population. Was this also true of the Golden Age? Or did growth benefit mainly capital rather than labour?

The study of changes in nominal and real wages carried out by Jan de Vries, Noordegraaf, and Nusteling enables us to provide a general answer to the first of these questions.<sup>36</sup> Noordegraaf concludes that economic growth between 1580 and 1650 led to a higher standard of living, particularly after the catastrophic fall

in the standard of living between 1565 and 1580. This improvement was not so much the result of higher real wages as a consequence of the rapid expansion of employment and an increase in the number of working days in the year.<sup>37</sup> Nevertheless, the standard of living in the first half of the seventeenth century was only slightly above that in 1580. After a relatively prosperous period between 1600 and 1620, there were a number of years around 1630 when real wages were extremely low – the consequence of marked price rises.

The series of data presented in Figure 2 confirm this conclusion. The wages of hodmen in Haarlem (1500-1580) and Amsterdam (1580-1800) calculated by Noordegraaf and Nusteling respectively have been compared with data on prices calculated by Nusteling (on the basis of estimates by Jan de Vries). The year 1580 has been taken as a base. Figure 2 shows that real wages of hodmen in Haarlem and Amsterdam were more or less constant in the long run. If we consider hodmen to have been more or less representative of labourers in general, then it is reasonable to conclude that long-term real wages were steady. The fall in real wages in the first quarter of the sixteenth century is somewhat suspect since the price data for the period 1500-1575 are not strictly comparable with those for after 1575. Further, the apparent decline in real wages after about 1760 was compensated to some extent by the introduction of the potato; this provided an alternative to bread in times of high bread prices, as a result of which the costs of subsistence did not increase to the extent implied by the decline in real wages.<sup>38</sup> We can conclude that real wages in Holland in the pre-industrial period were fairly stable in the long run.



*Capital holdings*

Much less is known about capital during this period. Nevertheless, we can attempt to reconstruct quantitative changes in personal wealth. I have tried to estimate the value of capital holdings for a number of years (1500, 1650, 1790) and to establish broadly the composition of private wealth – to what extent it consisted of ‘productive’ capital (investment in agriculture, trade, and industry), and to what extent it consisted of lending to the government and capital invested abroad. It should be noted that these data give an impression of long-run changes during the period 1500-1800 in the value of capital holdings rather than of changes in the stock of capital goods. In the period 1650-1790, for example, the real value of capital invested in agricultural land rose considerably because of the increase in the (relative) price of land – the number of hectares of farmland remained practically the same however. The rise in the relative price of farmland partly resulted in turn from the decline in interest rates. Available sources also enable us to calculate the average rate of interest on the government debt for the same years as those for which data are available on the value of capital holdings. The combination of the two sets of data – on interest rates and the level of capital holdings (per capita) – gives a very rough indication of how capital incomes in Holland changed in the long term.

For the years around 1500 the yields of a good number of taxes levied by cities on personal wealth are known, and these give an indication of capital wealth (Table 5). Several studies using the sources from which these data are drawn have shown that at the beginning of the sixteenth century estimates of wealth were often made with considerable care. In Edam the register for 1462 contains specific information on the possession of *renten* (government bonds), houses, land, cows, beds, ships, shared ownership of any ships, merchandise, carpenter’s workshops and ships-carpenter’s yards, looms, nets, and gardens.<sup>39</sup> In general, however, we may assume that because they are based on taxes these estimates understate the real value of capital holdings. On the other hand, the mayors of Amsterdam declared that merchants overstated their wealth in order to improve their credit worthiness.<sup>40</sup>

Table 5 shows that around 1500 the average wealth of citizens was about 50 guilders (one guilder was equivalent to a Holland pound consisting of 40 *groten*) – only in Amsterdam and Haarlem in 1483 was the figure significantly higher, while in Gouda and Delft it was much lower. In the case of Gouda one explanation may be that the assessments were made at the end of a period of depression in the 1480s. In Haarlem, too, average wealth fell by a half during this depression. In the mid-1490s the economic situation improved and a period of relative prosperity began that continued until about 1520. If average wealth was indeed close to 50 guilders, then this implies that the total wealth of the 125,000 urban citizens was 6 to 7 million guilders. The average wealth of those living in rural areas would have been less of course; not only was trade and industry concentrated in the cities,

but a great deal of agricultural land was owned by the urban élites.<sup>41</sup> As a rough estimate, we may presume that the average wealth of those living in the countryside was no more than half of the corresponding figure for urban dwellers. This suggests that total wealth was in the region of 10 to 12 million guilders, and since these estimates probably understate the actual level of wealth, 12 million guilders is a more likely figure than 10 million.

This wealth consisted almost entirely (85 to 90%) of investment in agriculture, trade, and industry. According to the *Informacie* of 1514, the level of debt owed by Dutch cities was at most 2 million guilders, but much of this was in the hands of investors in the Southern Netherlands (and Utrecht).<sup>42</sup> It is probable that most capital was tied up in agricultural land. The approximately 300,000 ha of land under cultivation yielded at least 400,000 to 500,000 guilders a year in gross rents;<sup>43</sup> assuming an interest rate of 6.25%; this implies that agricultural land had a capital value of at least 5 million guilders.

The level of capital wealth in the seventeenth and eighteenth centuries can be estimated in various ways. Data on the yield of taxes on capital wealth can be used to establish the probable minimum level of wealth (Table 6). On the basis of these figures, it would seem that the level of capital wealth increased from at least 160 million guilders in 1599 to at least 1,400 million in 1788. This last figure in particular is somewhat suspect because the 4% tax on wealth levied in 1788 was actually a sort of forced loan on which 2.5% interest was paid, as a result of which it is possible that a larger proportion of capital assets than the required 4% was 'paid'. We shall therefore try to compare the figures given in Table 6 with independent estimates of the most important components of capital wealth for c. 1650 and c. 1790.

The following components of capital wealth can be distinguished:

1. Capital invested in property: (agricultural) land, houses, and other buildings; this also includes a proportion of capital invested in industry (mills, shipyards, breweries) and in trade (warehouses).
2. Capital invested in moveable property: these estimates include only the value of the merchant fleet and the stock of commercial goods.
3. Capital invested in government debt.
4. Capital invested abroad.

No estimates have been made of the value of other types of property, including livestock, tools, and consumer durables (jewellery, carriages, paintings). The value of these was probably rather small.

On the basis of data from the *verpondingen* of 1632 and 1732 and the first cadastral estimates relating to 1808-1810, the level of income from rents and leases can be estimated; it grew from 13.5 million guilders in 1632 to about 30 million in 1810.<sup>44</sup> In 1650 income from rents and leases was probably higher than in 1632 – the series of land rents presented by Kuys and Schoenmakers and the series of house rents in Amsterdam calculated by Lesger show that there was a

clear upward trend between 1630 and 1650 – and income from property can therefore be estimated to have been about 15 million in 1650.<sup>45</sup> Income from property is unlikely to have risen between 1790 and 1808-1810 – countering the decline in rents that Lesger observed for Amsterdam was the rise in the value of leases, the result of high agricultural prices. In order to determine the value of property, it is necessary to multiply this income by a factor that reflects the decline in interest rates between 1650 and 1790. On the basis of Prak and De Jong's research into the estates of Leiden and Gouda's élites, it would appear that this factor was about 12 in 1650 and about 16 in 1790.<sup>46</sup> This implies that the value of property rose from about 180 million guilders in 1650 to about 480 million in 1790 (Table 9).

The value of the merchant fleet was modest: in 1510 estimates of 7 guilders per *ton* suggest a total of 270,000 guilders;<sup>47</sup> around 1780, on the basis of data relating to the price of ships from several Frisian shipyards, the corresponding figure is c. 55 guilders per *ton*, implying a total of 22 million guilders.<sup>48</sup> In comparison, the much more extensive series of data used by Horlings suggests the value of the merchant fleet in 1850, then about as large as in 1780, was 25 million guilders.<sup>49</sup> Given, among other things, the increase in construction costs in the second half of the eighteenth century, it is not unreasonable to estimate the value of the merchant fleet in 1650 to have been at most 20 million guilders.<sup>50</sup>

More important, but also much more difficult to estimate, is the value of the stock of commercial goods. It is likely that the size of the stock was related to the level of Holland's trade abroad. A few very rough estimates of this are given in Table 7. P.L. van de Kastele estimated that the level of total capital invested in trade in 1797 was around 200 million guilders.<sup>51</sup> This estimate implies that the level of investment in stock was less than the value of international trade. There are reasons to presume that in the mid seventeenth century the relationship between these two factors was different and that the value of stocks held was relatively high. The struggle for a monopoly position, which P.W. Klein has argued was characteristic of Holland's merchants in this period, implied the need to hold large stocks in order to control the market.<sup>52</sup> In the eighteenth century attempts to monopolize the market were less intense, partly as a result of the sharp increase in international competition, and the value of stocks held by merchants was probably lower. Only in the case of the VOC can this change be analysed: around 1650 the value of the stock of commercial goods (at cost price) was, roughly speaking, equivalent to the level of annual sales – both fluctuated around 8 million guilders. In the period 1771 to 1780 sales had increased to about 20 million guilders a year, but the value of the stock of commercial goods had declined to about 6 million guilders.<sup>53</sup> On the basis of these considerations and the experience of the VOC, the stock of commercial goods in 1650 can be estimated to have been at most twice the value of total foreign trade – say around

200 million guilders; for 1790 we have used Van de Kastelee's estimate of 200 million guilders (see Table 9).

The size of Holland's debt increased from 130 million guilders in 1650 to 360 million guilders;<sup>54</sup> these figures do not include the (much smaller) debts of the Generaliteit (the Admiralty), cities, and district water authorities held by citizens of Holland.

The most recent estimates of the change in the level of investment abroad, made by Dormans, indicate an increase from 300 million guilders in 1770 to 765 million guilders in 1792 (Table 8);<sup>55</sup> it is assumed that a small proportion of this, i.e. 15%, was not held by citizens of Holland.

The estimates are set out in Table 9. They imply a very rapid increase in wealth in the period 1650-1790, not what one would have expected during a period of economic stagnation. For reasons of completeness, supplementary data that indicate the same phenomenon are presented below:

- In Leiden and Gouda the average value of the assets of regents (and in Gouda of the merchants too) increased significantly during the course of the eighteenth century; it doubled in Leiden and increased by 250 to 300% in Gouda.<sup>56</sup>
- In Amsterdam and in Delft data on the value of dowries and of inheritances indicate that the proportion of the population that was wealthy increased significantly and the number of poor declined relatively; this too suggests there was an increase in the level of capital assets, an increase not restricted to the élite.<sup>57</sup>
- According to data on death duties presented by A.C. Carter, the proportion of individuals with capital assets exceeding 90,000 guilders increased from 1.7% in 1739/40 to 4.4% in 1799/1800; the proportion of those with assets of between 20,000 and 90,000 guilders increased from 7.9% to 15.7% during the same period. A rough estimate – assuming the average value of assets under 20,000 guilders was 5,000 – suggests that the average value of inheritances subject to death duties doubled between 1740 and 1800, which is again consistent with our other data.<sup>58</sup>
- Van der Spiegel estimated in 1782 that the wealth of the Dutch Republic had increased since 1648 by at least 1,000 million guilders, which is consistent with the estimates of Table 9.<sup>59</sup>

In short, all the figures point to significant growth in the level of capital assets in Holland in the course of the eighteenth century.

#### *Labour and capital compared*

The estimates presented above are summarized in Table 10, which shows that the level of capital accumulation was enormous. In both the periods 1500-1650 and 1650-1800 real per capita wealth tripled. The most important factor in this was no doubt domestic savings; only for the period 1580-1620 is there any evidence of significant capital flows to Holland from abroad. While this accumulation of capital resulted in interest rates falling by about a half, from 6.25% (a fairly standard rate at the beginning of the sixteenth century) to about 3% around 1790,

on the basis of the data in Table 10 it can be estimated that per capita income from capital increased from 2.5 guilders in 1500 (equivalent to 12.5 guilders in 1650 prices) to more than 60 guilders in 1790.

If these estimates are correct, then it would appear that economic growth in early modern Holland was accompanied by a change in the distribution of income. Real wages remained at best constant in the long run – the growth in per capita income probably benefited only capital. In this respect, pre-modern growth differs fundamentally from the ‘modern economic growth’ that characterized the period after 1850 and that benefited labour, too.

The estimates presented in Table 10 also cast new light on the debate concerning the development of the Dutch economy in the eighteenth century. Riley takes a somewhat revisionist view in arguing that there is evidence that there was an increase in nominal and real incomes in Holland in this period.<sup>60</sup> He points particularly to the growth of the financial sector during these years. On the other hand, research by Johan de Vries, Jan de Vries, Van der Woude, and Van Zanden has shown that per capita output declined somewhat, or at best stagnated.<sup>61</sup> To some extent, these apparently conflicting claims can be reconciled. Despite stagnating production, Holland became richer during the eighteenth century because of the continuing growth of private wealth. Net investment in trade, industry, property, and land was low – perhaps even negative – but the level of capital invested in government loans as well as abroad – mostly also in loans to governments – increased rapidly (Table 8). The savings surplus in the private sector increased consistently and significantly (Table 10). Up until 1720 the government more or less absorbed this savings surplus. After 1720 an increasing amount went abroad and was invested in foreign government bonds and, between c. 1760 and 1775, plantations in Surinam. So the period 1650-1800 can be characterized as a phase of ‘accumulation without growth’, an event undoubtedly unique in economic history.

#### *4. Conclusion*

This essay presents estimates concerning the ‘stylized facts’ of the long-term development of the economy of Holland in the early modern period. Central to our analysis is the question of whether the economy grew, and to what extent this growth benefited labour and capital. Much work remains to be done to produce more robust and more detailed estimates than those provided here. Nevertheless, the general outline of the development of the Dutch economy up to 1650 seems fairly clear. It is evident from our findings that per capita output probably did not significantly increase between 1500 and 1580, while between 1580 and 1650 it clearly did increase. Per capita output rose by an average of at least 0.3% per year between 1580 and 1650, while the population increased by about 0.9% per year. The resulting growth in income per

capita did not benefit labour; in the long run, real wages remained at best constant. Per capita wealth increased considerably throughout the period 1500-1790 – by tenfold in real terms – and this increase was not offset by a similar fall in interest rate levels (they were more or less halved). As a result, per capita income from capital increased significantly; a not insignificant proportion of this increase consisted of income from foreign investments however.

Table 1. *Area of land under cultivation, level of real rents and value added in agriculture (1500=100), 1500-1832*

	1500	1580	1650	1832
Cultivated area (1000s ha)	300	314	360	376
Real rents (1500=100)	100	120	150	180
Estimated value added (at constant prices, 1500=100)	100	125	180	225

Sources: J. Lucassen, 'Beschouwingen over seizoengebonden trekarbeid', *Tijdschrift voor Sociale Geschiedenis* 8 (1982) 334, 336, 350-351; A.M. van der Woude, *Het Noorderkwartier; Een regionaal historisch onderzoek in de demografische en economische geschiedenis van westelijk Nederland van de late middeleeuwen tot het begin van de negentiende eeuw* (AAG Bijdragen 16 (1972)/Utrecht 1972) 46-53 and the sources cited in notes 8 and 9.

Table 2. *Estimates of the size of the Dutch merchant fleet, 1500-1850 (in tonnes)*

1500	38,000
1532	38,000 a
1567	160,000
1636	310,000 b
1670	400,000
1750	365,000 b
1780	400,000
1824	131,000
1850	390,000

a – Holland only

b – excluding ships belonging to the VOC and the WIC

Sources: Van Zanden, 'De economie', 587; H.P.H. Jansen, 'Handelsvaart van de Noordnederlanders', *Maritieme geschiedenis der Nederlanden* (Bussum 1976) I: 272.

Table 3. *Estimates of beer production in the most important brewing centres and in Holland as a whole, 1510/14-1651 (in thousands of vaten)*

	1510/14	1554/5	1569/70	1590/91	1651
Gouda	432	122	87	23	26
Haarlem	151	102	80	95	215
Delft	290	511	630	202	82
Total	873	735	797	320	323
Total Holland	1000-1100	-	-	598	907

Sources: Haarlem: Van Loenen, *De Haarlemse brouwindustrie*, 47; Gouda: yield of *accijns* on *hoppebier* collected by A. van der Poest Clement and available in Gemeente-Archief [GA; = Municipal Archive] Gouda see also V.C.C.J. Pinkse, 'Het Goudse kuitbier', *Gouda zeven eeuwen stad* (Gouda 1972) 128; Delft: J.J. Woltjer, 'Een Hollands stadsbestuur in het midden van de 16e eeuw; Brouwers en bestuurders te Delft', D.E.H. de Boer & J.W. Marsilje (eds), *De Nederlanden in de late Middeleeuwen* (Utrecht 1987) 261, 268, 278; 1510/14: *Informacie*,

various pages (data on yield of *accijns* on beer and the tax per *vat*); 1590: ARA, Huis Adrichem, no. 229; 1651: ARA, Financie van Holland, no. 826.

Table 4. *Estimates of the growth of production in the most important sectors of the economy and in the economy of Holland as a whole, 1500-1650 (annual average growth rates)*

	1500-1580	1580-1650	1500-1650
Agriculture	0.3	0.5	0.4
Herring fisheries	1.0	0.4	0.7
International services	1.8	1.3	1.5
Textiles (woollen)	-2.0	3.3	0.5
Brewing	-0.6	0.6	-0.1
Shipbuilding	1.8	1.3	1.5
Gross output weights 1500	0.7	1.2 a	0.95
weights 1650	0.3	1.2 a	0.7
Population	0.5	0.9	0.7

a –minimum estimate

Sources: see text.

Table 5. *Estimates of per capita wealth c. 1500 (in guilders/Holland pounds of 40 groten)*

	year	total capital (1000 guilders)	capital per capita(guild.)
Amsterdam	1505/7	1018	73
Delft	1508	536	36
Haarlem	1495-1500 a	444-553	32-40
Leiden	1498	919	55
Leiden	1502	805	49
Gouda	1492	216	23
Enkhuizen	1514	200	51
Hoorn	1514	332	54
Edam	1514	147	54
Total		3810	46
Haarlem	1483	973	70
Alkmaar	1532	547	78-99
Edam	1462	317	60-80

a – seven different estimates ranging from 444 to 553

Sources: *Informacie*, various pages; Tracy, *Holland*, 30; Sparreboom, 'Twee fiscale bronnen', 160; H.E. van Gelder, 'Een Noord-Hollandse stad 1500-1540', H.E. van Gelder, *Alkmaarse opstellen* (Alkmaar 1960) 34; H. Kokken, *Steden en staten* (Den Haag 1991) 166-167.

Table 6. *The taxable value of capital assets according to taxes levied in 1599, 1650, 1672 and 1788 (in millions of guilders).*

1599	160
1650	400
1672	626
1788	1400

Sources: Dormans, *Het tekort*, 52, 69; J.M.F. Fritschy, *De patriotten en de financiën van de Bataafse Republiek* ('s-Gravenhage 1988; Hollandse historische reeks X) 36, 47-48; ARA, *Financie van Holland*, no. 451.

Table 7. *Estimates of the value of Dutch international trade 1560-1780 (in millions of guilders)*

1560	40 a
1650	100
1750	125
1780	250-300

a – including the Southern Netherlands

Sources: J. de Vries, *De economische achteruitgang der Republiek in de achttiende eeuw* (Leiden 1959) 27-28; Bruijn, 'Scheepvaart 1580-1650', 139 (Bruijn estimated that the value of European imports in 1636 was 30.4 million and in 1650 around 40 to 50 million; imports from outside Europe amounted to at least 10 million guilders; the value of exports was certainly less than that of imports; a figure of 100 million guilders for the total value of international trade is thus somewhat conservative); 1560: W. Brulez, 'De handelsbalans der Nederlanden in het midden van de 16de eeuw', *Bijdragen voor de Geschiedenis der Nederlanden* 121 (1966/67) 278-310; Brulez estimated total imports to be 20-22 million guilders.

Table 8. *Estimates of capital invested abroad and in loans to the States of Holland, 1650-1790 (in millions of guilders)*

	Public debt (Holland)	Foreign investments	Average increase
1650	130	0	-
1720	310	0	2.6
1770	335	250	6.0
1790	360	650	21.3

Sources: J.C. Riley, *International government* (Cambridge 1980) 221, 243; Dormans, *Het tekort*.

Table 9. *Estimates of the value of capital assets in 1650 and in 1790 (in millions of guilders)*

	1650	1790
Property	180	480
Merchant fleet	20	22
Stocks	200	200
Government debt	130	360
Abroad	-	650
Total	530	1712

Sources: see tables 6, 7 and text.

Table 10. *Estimates of private wealth and interest rates, 1500-1790.*

	Private capital		Interest	
	total (million)	per capita	at 1650 prices	%
1500	10-12	ca 40	ca 200	6.25
1650	500-50	ca 650	ca 650	5
1790	1700-50	ca 2150	ca 2150	3

Sources: see text; interest rates from: *Informacie* (interest on *losrenten*) and Dormans, *Het tekort*; index of cost of living from H.P.H. Nusteling, *Welvaart en werkgelegenheid* (Amsterdam 1985) 280-1.

## NOTES

\* Translation: Chris Gordon (The English Word).

- 1 J. de Vries, *The Dutch rural economy in the Golden Age, 1500-1700* (New Haven/London 1974); see also J. de Vries, *Barges and capitalism; Passenger transportation in the Dutch economy (AAG Bijdragen 21 (1978); Utrecht 1981).*
- 2 A. Maddison, *Dynamic forces in capitalist development* (Oxford 1991) 30-35; J.L. van Zanden, 'Economische groei in Nederland in de negentiende eeuw', *Economisch- en Sociaal-Historisch Jaarboek 50* (1987) 68.

- 3 J.L. van Zanden, 'De economie van Holland in de periode 1650-1805: groei of achteruitgang?', *Bijdragen en Mededelingen betreffende de Geschiedenis der Nederlanden* 102 (1987) 562-609.
- 4 Cf. J.G. van Dillen, *Van rijkdom en regenten; Handboek tot de economische geschiedenis van Nederland tijdens de Republiek* ('s-Gravenhage 1970); J.I. Israel, *Dutch primacy in world trade, 1585-1740* (Oxford 1989).
- 5 Calculated from Rijksarchief Haarlem [RAH; = Provincial Archives Haarlem], Gecommitteerde Raden Noorderkwartier, no. 130.
- 6 The *Informacie*, or – in full – the *Informacie up den staet Facultheyt ende Geleghentheyt van de Steden ende Dorpen van Hollant ende Vrieslant om daerna te reguleren de nyeuwe Schiltaele, gedaen in den jaere 1514* (ed. R. Fruin, Leiden 1866), was a village-by-village survey ordered by the future Hapsburg emperor, Charles V.
- 7 J.C. Naber, *Een terugblik* (Haarlem 1970) 18; see for instance K.P.J. Janse, 'Gooise landbouw en kopptienden', *Economisch- en Sociaal-Historisch Jaarboek* 54 (1991).
- 8 J. Kuys & J.T. Schoenmakers, *Landpachten in Holland, 1500-1650* (Amsterdam 1981; Amsterdamse Historische Reeks 1).
- 9 N.W. Posthumus, *Nederlandsche prijsgeschiedenis* (Leiden 1964) II: series nos 28a, 104, 160 and 180.
- 10 This assumption is generally justified if the elasticity of substitution between land and labour is approximately -1, a not unreasonable premise.
- 11 De Vries, *The Dutch rural economy, 188-90*; J. de Vries, 'Landbouw in de Noordelijke Nederlanden', *Algemene geschiedenis der Nederlanden* (Bussum 1980) V: 42, concludes on the basis of similar sources that productivity must have increased by as much as 50% between 1570 and 1650.
- 12 H.A.H. Kranenburg, *De zeevisscherij van Holland in den tijd der Republiek* (Amsterdam 1946) 29-32; see also R.W. Unger, 'Dutch herring, technology and international trade in the seventeenth century', *Journal of Economic History* 40 (1980) 253-279.
- 13 R.T.H. Willemsen, *Enkhuizen tijdens de Republiek; Een economisch-historisch onderzoek naar stad en samenleving van de 16e tot de 19e eeuw* (Hilversum 1988) 55-6.
- 14 R. Fruin (ed.), *Informacie*.
- 15 Willemsen, *Enkhuizen*, 56.
- 16 G. Asaert, 'Scheepvaart en visserij', *Algemene geschiedenis der Nederlanden* (Bussum 1980) IV: 134.
- 17 W.J. Alberts & H.P.H. Jansen, *Welvaart in wording* (Den Haag 1977) 300.
- 18 J.R. Bruijn, 'Scheepvaart in de Noordelijke Nederlanden 1580-1650', *Algemene geschiedenis der Nederlanden* (Bussum 1980) VII: 138.
- 19 In the period 1650-1805, too, the pattern of change in international trade mirrored that in the size of the merchant fleet; see Van Zanden, 'De economie', 582-588.
- 20 Israel, *Dutch primacy*.
- 21 Van Dillen, *Van rijkdom en regenten*, 197-217.
- 22 N.W. Posthumus, *De uitvoer van Amsterdam, 1543-1545* (Leiden 1971) 25; see also N.W. Posthumus, *De geschiedenis van de Leidsche lakenindustrie* (Den Haag 1908) I: 368.
- 23 Posthumus, *Lakenindustrie*, I: 371.

- 24 C.M. Lesger, *Hoorn als stedelijk knooppunt; Stedensystemen tijdens de late middeleeuwen en vroegmoderne tijd* (Hilversum 1990; *Hollandse Studiën* 26) 76, shows that the production of *lakens* decreased from 4500 in 1514 to 566 in 1559 and 105 in 1562; T. Wijsenbeek, *Achter de gevels van Delft; Bezit en bestaan van rijk en arm in een periode van achteruitgang (1700-1800)* (Hilversum 1987) 57; J.E.J. Geselschap, 'De lakennijverheid', *Gouda zeven eeuwen stad* (Gouda 1972) 134-135; L. Noordegraaf, 'Nijverheid in de Noordelijke Nederlanden 1480-1580', *Algemene geschiedenis der Nederlanden* (Bussum 1979) VI: 18, 26.
- 25 J.G. van Dillen (ed.), *Bronnen tot de geschiedenis van het bedrijfsleven en het gildewezen van Amsterdam 1512-1632* (Den Haag 1929) I: XIV.
- 26 L. Noordegraaf, 'Textielnijverheid in Alkmaar 1500-1850', *Alkmaarse historische reeks* 5 (1982) 42-44; Geselschap, 'De Lakennijverheid', 137-42; J.A.F. de Jongste, *Onrust aan het Spaarne* (Den Haag 1982) 16; for the decline in Delft after 1630 see Wijsenbeek, *Achter de gevels*, 58.
- 27 Posthumus, *Lakenindustrie*, II: 946.
- 28 Posthumus, *Lakenindustrie*, II: 883-886.
- 29 Posthumus, *De uitvoer*, 242.
- 30 H. Soly, 'De economische betekenis van de Zuidnederlandse brouwindustrie in de 16e eeuw', *Economische geschiedenis van België* (Brussel 1972) 101-105.
- 31 L. Noordegraaf, 'Nijverheid in de Noordelijke Nederlanden 1580-1650', *Algemene geschiedenis der Nederlanden* (Bussum 1980) VII: 77; J.C. van Loenen, *De Haarlemse brouwindustrie voor 1600* (Amsterdam 1950).
- 32 The tax data for 1590 are perhaps on the low side; Delft in particular protested at the way in which the duties were levied, believing that duties in other cities were being systematically evaded (see K. van Berkel, 'Delft als industriestad in de zestiende eeuw', *De stad Delft* (Delft n.d.) 81). These data are consistent with what is known from other sources, however, about the amount of beer brewed in Haarlem and Gouda (see sources Table 6).
- 33 See R.W. Unger, *Dutch shipbuilding before 1800; Ships and guilds* (Assen 1978) 11; Unger estimated that in the seventeenth century perhaps half the output of shipbuilding was exported, which means that the output must have expanded even more rapidly.
- 34 Sources: Algemeen Rijksarchief [ARA; = National Archives], The Hague: Huis Adrichem no. 229 (1590/91); Joh. van Oldenbarnevelt, no. 110 (1608); Financier van Holland, no. 826 (1651); Amsterdam's share of total soap production increased – see Van Dillen (ed.), *Bronnen*, I: XXI, II: XXVIII.
- 35 See Van Zanden, 'De economie', 603-606, and the sources cited in notes 12, 16, 22, 31 and Table 3.
- 36 J. de Vries, 'An Inquiry into the behaviour of wages in the Dutch Republic and the Southern Netherlands, 1580-1800', *Acta Historiae Neerlandicae* 10 (1978) 79-97; L. Noordegraaf, *Hollands welvaren?; Levensstandaard in Holland 1450-1650* (Bergen 1985); H.P.H. Nusteling, *Welvaart en werkgelegenheid in Amsterdam, 1540-1860; Een relaas over demografie, economie en sociale politiek van een wereldstad* (Amsterdam 1985).
- 37 Noordegraaf, *Hollands welvaren?*, 170-171.

- 38 L. Noordegraaf, 'Levensstandaard en levensmiddelenpolitiek in Alkmaar vanaf het eind van de 16e tot het begin van de 19e eeuw', *Alkmaarse Historische Reeks* 4 (1980) 55-100.
- 39 J. Sparreboom, 'Twee fiscale bronnen uit het stadsarchief van Edam, circa 1462', *Holland* 13 (1981) 150.
- 40 J.D. Tracy, *Holland under Habsburg rule 1506-1566* (Oxford 1990) 28.
- 41 De Vries, *The Dutch rural economy*, 43-49.
- 42 Calculated from data on the payment of *renten* interest by the fourteen largest cities in Holland in the *Informacie*, assuming an average interest rate of 6.25% (the average interest rate of the *losrenten* in this source).
- 43 Kuys & Schoenmakers, *Landpachten*, 58 (they give an average rent of 1.57 guilders per *morgen* for 1510).
- 44 Van Zanden, 'De economie', 576; 1810: ARA, Collectie C. van de Breugel, no. 48; J.L. van Zanden, *De economische ontwikkeling van de Nederlandse landbouw in de negentiende eeuw 1800-1914* (Wageningen 1985) 125.
- 45 Kuys & Schoenmakers, *Landpachten*; C.M. Lesger, *Huur en conjunctuur; De woningmarkt in Amsterdam, 1550-1850* (Amsterdam 1986) 181.
- 46 M. Prak, *Gezeten burgers; De elite in een Hollandse stad. Leiden 1700-1780* ('s-Gravenhage 1985, Hollandse Historische Reeks VI) 283; J.J. de Jong, *Met goed fatsoen* ('s-Gravenhage 1985, Hollandse historische reeks V) 260.
- 47 Based on Posthumus, *De uitvoer*, 88-89 (data on value and *lastage* of 12 ships in 1510/11) and table 2.
- 48 J.L. van Zanden, 'De Friese economie in de 19e eeuw', *It Beaken* (1992) table 2 (data on the cost price of ships build in Frisia); and table 2.
- 49 E. Horlings, 'De waarde van de Nederlandse koopvaardijvloot in 1850', (Amsterdam 1992; unpublished manuscript).
- 50 For the rise in construction costs see Van Zanden, 'De Friese economie'.
- 51 'Begrooting der inkomsten van de ingezetenen der gehele Republicq', unpublished manuscript in ARA, Coll. Canneman, no. 4.
- 52 P.W. Klein, *De Trippen in de 17e eeuw; Een studie over het ondernemersgedrag op de Hollandse stapelmarkt* (Assen 1965).
- 53 J.P. de Korte, *De jaarlijkse financiële verantwoording in de Verenigde Oostindische Compagnie* (Leiden 1984) appendices 1 and 9.
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### III

## THE ROLE OF THE ENTREPRENEUR IN THE ECONOMIC EXPANSION OF THE DUTCH REPUBLIC\*

by

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#### *1. Introduction*

##### *Early modern enterprise and reducing risks*

The entrepreneur is an elusive historical phenomenon, changing its very nature according to the many points of view from which it can be considered. Is 'entrepreneur' a role or a function? Is it an aspect or a force of human behaviour? Is it a specific activity or a certain number of activities? Is the entrepreneur a mere actor – either personalized or institutionalized – or an essential factor? History itself is unable to give definite answers to such questions. Even if it could, it would remain unclear how to isolate entrepreneurship from its social environment and the factors or conditions that shape it. Neither can historical experience tell us how to avoid confusing the phenomenon with its outcome in terms of success or failure. It follows that tracking down entrepreneurs is not simply trying to find out their social origins or who they were, what they did and what spirit they represented. Entrepreneurial history is far too rich to be captured in a comprehensive description. We will see whether resorting to functional economic analysis offers some help.

Is there any distinguishing economic feature that would justify using the label entrepreneurship?<sup>1</sup> Economic theory has provided quite a number of answers to this question, ever since it was realized that this was a problem worth thinking about. Since this revelation came as late as the eighteenth century – and then only gradually – it is a matter of speculation whether there is any purpose in distinguishing entrepreneurs at earlier times when capitalism was still in the making and industrial growth had as yet to begin. Yet, the market economy had by then already extended far beyond the field of consumer goods. It had also become of

decisive importance to the mobilization of production factors such as land, labour and capital. It is therefore hardly coincidental that attention has focused almost exclusively on the entrepreneur in the market economy, although entrepreneurial roles in non-market economies are acknowledged as well.

The analytical approach has revealed quite a number of elementary features of entrepreneurial behaviour that are also relevant to market operations before the eighteenth century. Two of them are of particular interest. The first is the management or administration of relatively scarce economic resources that have alternative uses. Such management requires planning on the basis of a mixture of rational calculation and inspired intuition in the face of competition under constantly changing market conditions. The second feature has to do with responsibility for taking risks. In economic life everyone is of course running risks all the time. In this case, however, it is a matter of particular risks, namely, the risks peculiar to creative optional choices between change and continuity, adaptation and originality, tradition and innovation.

Both features – management and risk-taking – amount in the final analysis to constantly deciding the optimal position of the enterprise on a continuum between the two poles of security and uncertainty. This is achieved by organizing and directing the production of goods and services and selling them on the market. The entrepreneur's central task is to balance risks and profits. Examining this function involves the study of the motives and origins of enterprising agents, their methods and techniques, the institutions and opportunities at their disposal, the obstacles and incentives they encounter, the degree of their success or failure. Entrepreneurial activities are consequently to be distinguished from the performance of individuals as private merchants, capitalists, employers, businessmen or innovators – however important such performance may be to the outcome of entrepreneurial decision-making. As a matter of fact, entrepreneurial behaviour can hardly be understood without taking into account the operational framework of risk and security and the conditions and circumstances giving shape to it at a particular time and place.

The predominantly agrarian European economy before the industrial revolution was characterized by a shaky configuration of separate and rather limited markets that were only poorly linked and coordinated. In the absence of advanced technology, its output was inflexible in the long run, leaving only small margins above the subsistence level. Consequently, capital formation proceeded slowly, if at all. However, the commodity supply was highly volatile in the short run. Under these circumstances, investing in inventory and having proper storage and transport facilities were crucial to a smooth functioning of the market, much more so than long-run investment in fixed industrial assets. The role of such assets in the regulation and stabilization of exchange relations was far less pronounced, as is evident from the subordination of banking and finance to short-run commercial transactions. In the absence of adequate technologies, quality control was poor

and the degree of product standardization was low, leaving room for what could be seen as isolated bargaining between buyers and sellers in a jungle of highly differentiated and personalized markets. Enterprise was therefore very much a family concern. The family firm dealing within a relatively small and narrow circle of well-known suppliers and customers was the main business unit.

Unless buying and selling were restricted to one and the same market, the risks and uncertainties of economic opportunities depended basically on the above-mentioned conditions. Other factors influencing the effectiveness of entrepreneurial behaviour took the form of a variety of obstacles and incentives to reducing risks, such as government policies, custom and tradition, and the social structure of the economy in question.

#### *Entrepreneurial clustering in the Netherlands*

The Dutch economy between 1580 and 1650 was spectacularly successful. Any explanation of this success is of necessity speculative, but let us assume that it was due to the tactical and strategic ability of entrepreneurs – particularly in commerce – to attune risk-taking to profit-making. Was this success primarily due to the clustering of individual entrepreneurial abilities? Or is it to be attributed to a structure of conditions that particularly favoured the exercise of such abilities?

We can safely say that the Dutch economic expansion starting in the 1580s was mainly achieved through the extension of external relations rendering higher gains from trade than before. But this is far from saying that the economy suddenly turned into an entirely new direction. On the contrary. The overseas expansion of Dutch shipping and trade to the economies of Western Europe and the Baltic area had already become normal during medieval times. This overseas expansion both resulted from and contributed to the rearrangement of the Dutch economy through land reclamation and urbanization. During the sixteenth century it was firmly supported and reinforced by the continuous improvement of the domestic agrarian economy. Rural and urban developments had already begun to make the Dutch domestic economy more or less unique, as far as the relatively high degree of economic specialization, differentiation and professionalization of the working population is concerned.<sup>2</sup> As a consequence, productivity rose and capital accumulation increased. Together, these developments supported the growth of market transactions. They also increased educational opportunities, which led to the improvement of the professional level of the labour force. They supplied the ways and means to more efficiently regulate government finance and administration, as well as other organizational and institutional advancements.<sup>3</sup>

Through such proceedings the Dutch market economy had already been actively engaged in substantially decreasing risks well before the 1580s. As a consequence, business enterprise had definitely become less of an adventurous gamble, though without turning into a safe and certain routine. External relations, however, until well into the sixteenth century, were confined to relatively safe and well-known

areas, such as trade in cheap bulk goods from the Baltic, coastal trade to England and France, and river trade in foods and raw materials to the German hinterland and the southern provinces of the Netherlands. By the end of the sixteenth century, other sources of profit were making their appearance.<sup>4</sup> Thanks to the rise in domestic productivity, which by now had spread from agriculture to various urban and rural industries, the international structure of comparative cost advantages became ever more favourable to the Dutch and their trading and shipping.<sup>5</sup> It permitted them to explore and exploit highly profitable markets outside their traditional ones. The relative cost advantage now allowed the Dutch to enter unknown areas and new commodity trades – like the one in luxury goods – which had hardly been open to them before because of the high risks associated with them. The merchant navy was now ready to meet the challenge. According to N.W. Posthumus, the Amsterdam ship-owning branch had gained considerably in economic power as early as the middle of the sixteenth century, when aristocratic financiers and merchants of substance succeeded in taking over control from shipmasters of inferior status, who had dominated the carrying business before.<sup>6</sup>

From the end of the sixteenth century, entrepreneurial choices of optimization were facilitated as all sorts of risks diminished, allowing more room for safety and security. It was a development that could hardly prevent attracting new entrepreneurial talent from at home and abroad, especially as market conditions elsewhere worsened, such as was very likely the case in the Southern Netherlands, Germany and maybe England as well. This clustering of mercantile entrepreneurship was, in turn, quite instrumental in opening up new overseas markets, the introduction of new business methods and techniques, and the increase and improvement of factor supply such as labour and capital. As it became easier to make the right sorts of entrepreneurial decisions, the process of commercial expansion became to some extent self-sustaining, until it was slowed down and even arrested by foreign competition that finally – probably starting in the middle of the seventeenth century – put an end to its exceptional opportunities.

It is possible to view the Dutch economic expansion during the first half of the seventeenth century more or less as a windfall profit, brought about by external causes quite outside the control of the Dutch, such as the weakening of foreign competition. But even in that case one would want to explain why the Dutch mercantile elite not only succeeded in holding on to its own competitive strength but actually managed to reinforce it. Returning to the basic assumption, we maintain that success came through effective ways to reduce risks, supported by institutional provisions and fostered by government policies, aiding entrepreneurs in marshalling the productive resources they required. Before considering the circumstantial evidence, however, sections 2 and 3 will deal with the actual ways and means of mercantile enterprise. Section 4 will then survey the operational framework of risk reduction by going into the matter of government policy, institutional change and the development of the labour and capital market.

## *2. The rise of the Dutch staple market*

The maritime commercial enterprise of the Northern Netherlands reaches far back into medieval times. In those days overseas trade developed as a special form of regional trade, mainly directed towards neighbouring areas but already extending into the Baltic. As Jonathan Israel has pointed out, these merchants did not particularly distinguish themselves either by their way of doing business – which remained largely traditional – or by their wealth – which generally remained modest. But however traditional or modest, they represented the elite of the growing market economy. During the final decades of the sixteenth century, Dutch maritime trade suddenly grew and expanded into new and different branches and directions. At the same time there was a clustering of mercantile entrepreneurship which was to become an essential feature of a Dutch staple market with global dimensions and an international wholesale trade. It would appear that this clustering was as much cause as effect of Dutch overseas economic expansion. The clustering occurred both through an increase in members of the established commercial elite and through the swelling of entrepreneurial ranks with newcomers from abroad. It is a moot point which of the two ways was more important. The problem will be dealt with more extensively below. The fact is that the clustering of entrepreneurial talents gave rise to a more or less homogeneous and solid group of wholesale traders, which gave structure and body to commerce in the early modern Netherlands.

As Van der Kooy has indicated, this trade tended to be concentrated in staple markets. These were concrete markets, where the merchants went with their commodities to do business in direct contact with buyers and sellers. Because transport of commodities, persons and messages was slow, dangerous and expensive, most traders only visited regional staple markets, which were often held only periodically; for them, long journeys were unprofitable. Surpluses of these regional markets were traded on markets of a higher level, so that a hierarchy of markets came into existence, at the top of which there was a central, permanent *entrepôt*, the concrete world market. The stockpiling merchants that were active on this *entrepôt* performed the staple function for world trade; they were the buffer between the supply, which was rather irregular, and the more evenly proceeding sales.<sup>7</sup>

Klein examined Van der Kooy's argument in 1965. He queries Van der Kooy's ideas on the existence of a hierarchy of markets, but emphasizes the economic significance of the staple markets. He especially stresses the considerations that motivated merchants to do business on the permanent *entrepôt*. The permanent concentration of demand and supply made the (abstract) market more transparent. This reduced the commercial risk, so that the cost price decreased. As supply was less regular than sales, prices fluctuated. These price fluctuations offered the prospect of future profits and thus stimulated stockpiling. Stockpiling, in turn, had

a stabilizing effect on the price. Both the option of profiting by price movements and the relative stability of the price level that was the result of using that option, made the *entrepôt* attractive – on the one hand to the stockpiling entrepreneur, on the other hand to suppliers and buyers, who could always expect an acceptable price level. Moreover, the concentration of demand and supply boosted the growth of trade-supporting service industries.<sup>8</sup> These service industries further reduced costs in the trading business. We can conclude that the *entrepôt* came into existence because merchants sought each other's presence for economic reasons.<sup>9</sup>

Of the emporiums of the seventeenth century the Dutch *entrepôt* was the largest and the most important.<sup>10</sup> Holland became the pre-eminent international trade centre, a central storehouse and exchange for the benefit of international commerce.<sup>11</sup> Acquiring and developing this central position was at the heart of the economic expansion of the Dutch Republic.<sup>12</sup> It does not follow that the rapid growth of industry remained limited to commerce: interrelated with commerce and reinforcing each other, many other branches of industry boomed – agriculture, fishery, industry, transport, insurance, lending.

The question of the causes of the economic expansion of the Dutch Republic is a classic one in Dutch historiography. If indeed the staple market came into existence because merchants came together for economic reasons, the question of the origin of the economic expansion can be narrowed down to the following questions. Why did merchants at the end of the sixteenth and in the seventeenth century meet here, of all places? Why did they prefer to settle here, of all places? And why did they engage in expanding and innovating enterprises here, of all places?

In the sixteenth century big business in the Netherlands was not done in the North, but in the South. The value of the turnover of foreign trade was many times larger in the South than in the North.<sup>13</sup> The great merchants were not found in Amsterdam, but in Antwerp. Towards the middle of the sixteenth century, Antwerp had developed into the central *entrepôt*, a storehouse and distribution centre of high-value products for Europe and the world.<sup>14</sup> From here Portuguese colonial wares, spices and sugar were distributed all over northern Europe.<sup>15</sup> From here English cloth was sold to the Baltic and the Levant. Iberian salt, French wine, subtropical fruit, American silver and oil went to the Baltic and Germany, even though part of the turnover was not physically transported via Antwerp itself.<sup>16</sup> Via Antwerp itself was exported the high-quality produce of the industries of the inland regions of the Southern Netherlands: fine cloth and linen, silk fabrics, clothing, jewels, goldwork and silverwork, produce of the metal industries.<sup>17</sup> These went to Spain, Portugal, the Baltic, England, France, Germany, Italy and the Levant.<sup>18</sup>

The role of the North in international economic relations in the sixteenth century derived to a large extent from that of the South. For sea transport the Antwerp entrepreneurs used ships on a large scale from Holland and Zeeland. The merchant

marine of the Southern Netherlands was relatively small.<sup>19</sup> The Northern Netherlanders, especially the Hollanders, dominated the northern European market of sea transport of bulk goods.<sup>20</sup> Their merchant marine was large and they transported the commodities in large quantities at low freights.<sup>21</sup> To the Baltic went French wine, salt from France, Spain and Portugal, North Sea herring, but also luxury goods from the Southern Netherlands.<sup>22</sup> Baltic grain and timber came to Holland.<sup>23</sup> The commerce in question was to a large extent dominated by inhabitants of Antwerp.<sup>24</sup> For the northwestern European trade, Antwerp entrepreneurs largely made use of the commission services of Amsterdam merchants.<sup>25</sup> The entrepreneurs of the North generally traded only on a modest scale for their own account.<sup>26</sup> Their commodity assortment and geographical range were limited. Without any doubt some of them were very rich. A few invested heavily in the Dutch East India Company at its founding in 1602.<sup>27</sup> But among the merchants of Amsterdam and the rest of Holland, there were not many that possessed truly great wealth with an extensive network of international relations.<sup>28</sup>

To some branches of industry in the Northern Netherlands, international commerce and shipping offered enlargement of sales potential at home and abroad. This was especially true for the textile industry, beer brewing and shipbuilding.<sup>29</sup>

The fall of Antwerp in 1585, and the subsequent blockade of the Scheldt and (starting in 1595) of the Flemish coast, brought the flourishing sea commerce of Antwerp to a sudden halt.<sup>30</sup> Many, among them numerous entrepreneurs, left the Southern Netherlands.<sup>31</sup> The merchants of Antwerp dispersed all over Europe. They went to northwestern Germany, Emden, Bremen, Hamburg, Stade, Cologne and Frankfurt, to Venice, Genoa, Lisbon and Seville. Some went to the Northern Netherlands, especially to Leiden.<sup>32</sup>

In the beginning, the slump of Antwerp's seaborne commerce probably had an unfavourable rather than an advantageous effect on the economy of the Dutch Republic.<sup>33</sup> It will not have benefited the Amsterdam commission business or the Holland and Zeeland carrying trade on behalf of the Antwerp merchants. However, after 1590 a reorientation took place among part of the Antwerp emigrants. Especially from their new residences in Germany, increasing numbers of them moved to the Northern Netherlands. This stream continued undiminished till after 1600, swollen by immigrating businessmen from Rouen, Lisbon, Oporto and still from Antwerp itself.<sup>34</sup>

In the Republic the immigrants usually continued their already existing business: the international trade in luxury goods, such as Oriental and American products and European textiles. In this way the immigrants introduced many important branches of commerce and industry that were heretofore unknown in the Republic, or at least undeveloped. Former inhabitants of Antwerp set up trade in Amsterdam with Russia via the White Sea, in which they had been active ever since the late 1570s.<sup>35</sup> In the 1590s businessmen of Antwerp and Ostend origin took the lead in establishing regular Dutch seaborne commerce of luxury goods

to West Africa and the Caribbean.<sup>36</sup> Antwerp merchants initiated the Dutch Mediterranean trade; and gradually they made the Hollanders familiar with it.<sup>37</sup> The textile industry of Leiden, which had sharply declined during the sixteenth century, received new impetus in 1580 with the arrival of several hundreds of drapers and weavers from Hondschoote, the centre of the highly developed Flemish woollen industry. They broadened the range of Leiden produce with new kinds of cloth.<sup>38</sup>

The blockade of the ports of the Southern Netherlands in 1595 led to the settlement in the Republic of businessmen from entirely different parts. Until that year Portuguese New Christians of Antwerp, on behalf of the merchants of Lisbon, distributed spices and sugar in northern Europe. The blockade put a sudden end to this. The Lisbon principals then sent Sephardi Jews and New Christians to the North to continue the trade.<sup>39</sup> Usually coming directly from Portugal, the Sephardi Jews settled in Amsterdam, but also in Hamburg, Emden and Rotterdam, while the New Christians settled in Rouen and Nantes.<sup>40</sup> The trade in Portuguese colonial commodities – sugar, Brazil wood, diamonds, cinnamon – was new to Amsterdam, and the rapidly growing Sephardi merchant community swiftly extended this commerce, which relied on imports from Portugal and the Portuguese colonies. Based on this trade, new branches of industry subsequently developed in Amsterdam, such as sugar-refining (introduced from Antwerp) and diamond-cutting.<sup>41</sup>

Native Northern Netherlands businessmen soon entered the trades introduced by the immigrants. In the period 1590-1609 they started trading with western and southern Europe and with western Africa. They also invested heavily in the trade with the East and West Indies. In the Dutch trade to the East Indies they even – together with Van Os, who came from Antwerp – led the way. Nevertheless, here too, Southerners, especially of Antwerp origin, soon played a prominent role.<sup>42</sup>

It has been pointed out many times that the immigration from the South had a positive effect on the economy of the North.<sup>43</sup> The newcomers brought with them their capital, their knowledge and abilities, their international network of relations, their commercial turnover, their production and income. They exerted a large additional demand on the Northern Netherlands market of production factors, commodities, services and facilities. By their very arrival they moved the main centre of international trade from the Southern Netherlands to the North, from Antwerp to Amsterdam.<sup>44</sup> This constituted an important extension of the existing international trade of the Republic, which, as has been indicated, had long had a far more limited range.

An important contribution to this mode of thinking has been made by Israel.<sup>45</sup> Israel stresses the significance of the domination of the 'rich' trades – the traffic in luxury goods, or high-value merchandise of low bulk – that had been such an outstanding feature of the Antwerp trade, and that had always been so much lacking in the North. Domination of the 'rich' trades was vital to the development of Dutch primacy in world trade. It could only be acquired by a 'powerful

merchant elite', which had always been virtually absent in the North. Precisely such a commercial elite, however, flocked to the Republic after 1590. 'Europe's leading merchants', 'key figures' among them, exiles from Antwerp mainly, chose the Dutch entrepôt as their base for long-distance, high-value commerce. As a group, they were one of the vital ingredients to the mix that shaped and sustained Dutch trade primacy. With them, in the final analysis, control over Europe's 'rich' trades migrated from the Southern to the Northern Netherlands.<sup>46</sup>

Notwithstanding the attractiveness of Israel's argument, the question can still be raised to what extent the contribution of the businessmen of the South was an indispensable factor for the growth of the economy of the North.<sup>47</sup> Would the economic expansion of the Republic not have taken place without their arrival? The question cannot be answered definitively. The expansion can be considered as a result of the combined activities of the entrepreneurs that had their businesses in the Republic. And, in any case in the beginning of the period of expansion, immigrants clearly occupied an important place among them.

However this may be, even after the great immigration wave had ebbed away, the economy of the Republic kept expanding, during more than half a century of exuberantly growing and innovating enterprise. Dutch entrepreneurs – newcomers and natives alike – found new markets, products, production technologies, forms of organization. This was accompanied by a rapid growth in demand for production factors and led to an economic growth that lasted until far into the seventeenth century. The following examples are well known: the Leiden cloth industry; the Haarlem bleachworks; the *fluyt* ship; the shipbuilding industry of Rotterdam, Amsterdam, and the Zaan River; windmill technology; the whaling industry; the Mediterranean trade; the East India Company; the West India Company; the exchange banks.<sup>48</sup>

This brief impression of the beginning of the expansion explains nothing. The question remains: What was it, in the last decade of the sixteenth century, that induced so many successful foreign businessmen to come to the Republic to continue their enterprises? And what subsequently induced new and native Dutch entrepreneurs to keep on enterprising, expanding, innovating? Without any doubt the requirements of the entrepreneurs must have been relatively well met by the market conditions in the Republic. Apparently the production factors could be obtained and combined here under attractive conditions. But exactly what market conditions did the entrepreneurs need, and what determined their requirements? What were their motives and their aims, and what means and strategies did they use to reach their goals? What, finally, did they require from the place where their business was based?

### *3. The entrepreneur on the Dutch staple market*

The essential business on the Dutch staple market was international commerce, consisting of buying and selling commodities on foreign markets.<sup>49</sup> The international merchant made use of price differences in space and in time. He bought from regional traders at home and abroad, who brought together the supply of commodities intended for the international market, this supply being generated by local producers and merchants. He sold to regional traders at home and abroad, who brought together the demand for commodities supplied on the international market, this demand being generated by local merchants and final purchasers. Thus, regional merchants fulfilled a collecting and distributing function.

In practice this abstraction assumed many different forms. Sometimes merchants themselves fulfilled the collecting or the distributing functions, or both, by engaging partners, factors or commission agents. Sometimes, before selling, merchants processed the purchased commodities within their own business, or had them processed outside.<sup>50</sup> Some merchants produced themselves the commodities they sold, whether before or after processing; they were active in the extraction of raw materials, for example in whaling and in mining. The nature of their trade caused some merchants to enter the businesses of shipping, insurance and granting credit.

Specialized entrepreneurs engaged in industrial activities: cloth manufacturing, shipbuilding, soap-making. But these entrepreneurs, too, in the interests of their business, often extended their activities within the industry or to adjacent trades, for example by importing raw materials or exporting finished commodities.<sup>51</sup>

This mingling of lines of business makes it, in practice, difficult and not very useful to strictly distinguish between entrepreneurs in commerce, industry, transport, etc. and we will not attempt this here. Our interest here is in the role of entrepreneurs in the economic expansion of the Dutch Republic from the point of view of their economic function. And that function – exerting demand for production factors, and combining production factors – is the same for all entrepreneurs.

#### *Types of businesses*

The main type of business on the Dutch staple market was the family business.<sup>52</sup> Members of the family supplied the working capital and fulfilled the entrepreneurial function. The nucleus of the family business was the one-man business: the individual entrepreneur and his personal capital. Very usual, however, were 'companies': businesses in which two or more entrepreneurs, for a limited period of time or permanently, worked together on the basis of capital or labour, or both, that they supplied themselves.<sup>53</sup> The partners in a company were certainly not by definition kin to each other. When they were, the family business could expand and branch out, for example geographically.

By no means did the company need to be the sole enterprise of the participants. Each of them could, whether or not in co-operation with others, invest capital and energy in several projects at a time.<sup>54</sup> The company, in turn, could do common business with third parties. A project might be a simple transaction for common account, or it might be the exploitation of a commercial or an industrial undertaking, a ship, a voyage, a privilege.<sup>55</sup> All this by no means resulted in wild diversification. In the final analysis each pursued a one-man business. The tangle of companies, contracts, relations of co-operation, and common projects upon which the entrepreneur embarked was complicated only in legal and administrative respects. The substance of his business could be of an almost serene inner consistency.

Unique in character and size were the Dutch East India and West India Companies, the VOC and the WIC. Established under charter with the States General, these were privately owned joint-stock companies with goals that were primarily commercial, but political and military as well. With the active support and contribution of the state, they operated on a scale that could not be realized by individual merchants, even if they worked together.<sup>56</sup> The functions of entrepreneur and provider of capital were separated within both the VOC and the WIC. The merchants who did the actual buying and selling in the market-place were employees of the companies.

#### *Motives, aims, recruitment*

The individual entrepreneur, like everybody else, was to a large extent motivated by his social environment: the family, the church, the socio-economic class, the branch of industry. The highest incentive was responsibility for the family. Prak indicates that in the eighteenth century the Leiden textile enterprises were financed with family capital and passed on from father to son. Each generation felt the obligation to improve the social position of the family and to pass it on to following generations.<sup>57</sup> Although Prak's argument does not concern the period of economic expansion, there is no reason to believe that the norms prevailing in the first half of the seventeenth century differed from those in the eighteenth century. The social and economic position of the family had to be upheld and preferably to improve. Confined to the economic point of view, this meant that the businessman, should safeguard and preferably enlarge the family capital while the family's consumption expenditure increased, or, at least, remained undiminished. The enterprise was simultaneously the source of income and the basis of the economic and social position of the entrepreneur and his family. The entrepreneur therefore aimed at realizing the largest trading results possible and at safeguarding the continuity of the enterprise. And, just like the family capital, the enterprise was passed on from generation to generation.

Obviously, under these circumstances, the most attractive branch of industry to entrepreneurs was one that offered the best prospects for profit and continuity.

Without any doubt – if only in view of the position it acquired in the economy of the Republic – the branch of industry that best met these requirements was international commerce.<sup>58</sup> As a result of the poor state of technology, production, transport and communication were so underdeveloped that price differences in space and time could be very great. The international trader profited from this situation.

On the staple market free competition prevailed.<sup>59</sup> This does not mean that just anybody was able to enter the attractive business of international trade – in any case on a reasonable scale. This business made high demands on the capital resources of the entrepreneur and upon his talents: his organizational skill, initiative, courage, creativity, intelligence. Relatively few would have met these requirements. Little is known about the recruitment of entrepreneurs in the age of expansion. But it may be assumed that many of them had been born to families of international businessmen, benefited from the social position of their parents, and took over the family business. Others will have entered the ranks of international entrepreneurs by marriage, contract of service, or independently, through talent and enterprising spirit.<sup>60</sup> Those who were less fortunate or talented had to content themselves with more modest trades, or wage labour. And of course not all branches of trade were equal: some branches of industry offered better prospects than others. It may be assumed that each in principle followed in the tracks of his father or his relatives, and aimed at improving the social position of himself and his relatives. To enter the ranks of the political power elite, the *regentenpatriciaat*, was the highest possible aim, only attainable for sons of regents and – particularly through marriage – for rich burghers. So it was in the eighteenth century.<sup>61</sup>

#### *Assets and business finance*

The trading business demanded few fixed assets. Items like real estate, installations, tools and ships formed a subordinate component of assets. The entrepreneur invested mainly in stock and in credit to buyers.<sup>62</sup> It may be assumed that the structure of the assets of industrial enterprises was similar, at least if the raw materials or semi-manufactured articles were purchased on the enterprise's own account. Where goods of other parties were processed, the balance sheet will have been considerably shorter. In that case fixed assets will have been more important. Noordegraaf has observed that many enterprises that produced for the export market, especially finishing industries, were capital-intensive rather than wage-intensive. In the textile industry, on the other hand, the wage factor was more important.<sup>63</sup> Just as today, the knowledge, skill and motivation of the entrepreneur and his employees and associates did not show up on the balance sheet. The same is true for the 'goodwill' of the enterprise, the relations with buyers and suppliers. These factors, too, can be counted as assets.

The enterprises were mainly – two-thirds or more – financed with the entrepreneur's own capital, the rest being made up with credit from suppliers.<sup>64</sup> Beginning entrepreneurs who had the prospect of an inheritance, for instance sons of rich families, could finance their business during the first years with money and long-term credit from family members.

#### *Entrepreneurial behaviour*

The entrepreneur aimed at business profits that were as large as possible and at continuity of the enterprise. To reach these goals he had to see that both turnover and the margin between purchase price and selling price grew, or at any rate remained level. The most important obstacle to this was competition in the marketplace. For on a competitive market, at a given market size, it is very hard to increase turnover without seeing a decline in profit margin, and equally hard to increase the profit margin without seeing a decline in turnover. Therefore, the entrepreneur tried as much as possible to avoid competition. An obvious strategy was to acquire a monopoly. Klein (1965) has indicated that entrepreneurial behaviour on the Holland staple market was indeed characterized by monopolistic practices aiming at market domination – on the one hand to increase gains by inflating prices, on the other hand to reduce risks. Monopolistic practices contributed substantially to economic growth, because without these practices the essential function of the staple market – stockpiling – would not have assumed the scale that it did. Moreover, the entrepreneurs employed the profits from their monopolies creatively and they invested in innovations.<sup>65</sup> In this analysis Klein applied Schumpeter's ideas on the early capitalism of the seventeenth-century Holland staple market: monopolistic practices stimulated economic expansion because they offered entrepreneurs a shelter that enabled them to invest in innovation.<sup>66</sup>

Klein's analysis has been widely accepted in historiography.<sup>67</sup> Veluwenkamp has pointed out, however, that monopolizing a commodity on the staple market was in fact seldom possible. In general, supply could only be dominated if the commodity in question came from a single production area. And by far most of the commodities that were brought to the staple market came from several production areas.<sup>68</sup> De Buck has shown that even Russia leather, which was produced only in Russia and therefore in theory could easily be monopolized, was supplied in Amsterdam by great numbers of entrepreneurs.<sup>69</sup> Therefore supply probably could only be dominated if a commodity came from a single production area *and* if the relevant authorities granted a legal monopoly.<sup>70</sup>

All this does not alter the fact that, for the Republic, the first half of the seventeenth century was an age of many and fundamental commercial and economic innovations. And, indeed, these innovations were the motor of economic expansion. To the entrepreneur this will not have been a point of consideration. He was urged to innovation by the ambition to increase his profit margin,

to increase turnover, to avoid competition. Schumpeter also pointed out the power of innovation as a weapon in the struggle of competition.<sup>71</sup> He stressed the decisive cost and quality advantages that can be gained by innovations. Sure enough, in the seventeenth century, too, finding new technologies could lower costs and improve quality.<sup>72</sup> But in addition to that, finding new products could generate new demand. And the discovery of new areas of production, purchase and sales could start totally new international trade flows. Moreover, through fundamental innovations the entrepreneur could to some degree create a new market, in which, at least temporarily, he himself dominated price and supply.<sup>73</sup> In that case the entrepreneur could quickly make a fortune. But he had to act fast. For usually he had only a few years to reap the fruits of his initiative. Large profit margins seldom lasted long. Although initially the pioneer was, almost by definition, a monopolist in his self-created domain, and thereafter perhaps for some time an oligopolist, sooner or later the way was clear for numerous imitators. And the arrival of these competitors made the daringly created monopoly on the new submarket soon evaporate, whereupon the profit margin shrank.

There are spectacular examples of innovations that succeeded or failed. The first journeys around Africa to East India and the subsequent Dutch advance in Asia belong to the first category; the expeditions in search of a northeast passage to Asia may be counted among the second category, although these, too, without any doubt had an important spin-off, for example contributing to the development of the Dutch Arctic whaling industry.

Whether successes or failures, many startling innovations came into being as the result of a certain degree of adventurousness. Such ventures required courage, and the willingness to take large risks: financially, materially and – to those who set out on a voyage – also physically. For success was not certain, and success required sacrifices. Nevertheless, the risks were matched by strong motives of a commercial, scientific, political, economic, social and personal nature.

Most innovations were not spectacular and did not arise suddenly. They were realized gradually, step by step, over a period of years, even of decades. This was true not only of technological innovations and the development of new products, but also of voyages of discovery and the opening up of new geographical markets. Willem Barents was neither the first nor the last Dutchman to sail the Arctic Ocean. The opening up of the White Sea route for Dutch trade with Russia may be marked by a year date, but the development of that trade route from adventure to routine took decades of gradual innovation. Only in the long term did innovations mark discontinuity in the development of society. In the short term they consisted of matter-of-course and continuous development, which only occasionally showed spectacular acceleration.

In the first half of the seventeenth century the Republic was bursting with innovative business spirit. Yet not all entrepreneurs possessed the courage, the talent and the means to innovate. And not all innovating entrepreneurs innovated

continuously. In the life of the entrepreneur the monopoly, including the monopoly on the submarket that sprang to life as a result of innovation, was a rare and short-lived delight.<sup>74</sup> Usually the entrepreneur had to stay on the lookout for other, more conventional means to evade competition and to increase turnover and profit margins. The most important of these means were customer relations, specializing, cutting costs and reducing risks.

Practices to ensure customer loyalty can be called 'monopolistic competitive', after the market form they generated. Steady customer relations brought relative certainty in the size of turnover and in sales conditions, and even enabled the entrepreneur to ask a price that was slightly higher than would have been possible under conditions of perfect competition. To be able to best attune the size and quality of the purchases to expected sales, moreover, the entrepreneur did his business as much as possible with regular suppliers.<sup>75</sup> This also rendered him relative certainty as to the price-quality relation of the commodities purchased. Thus commerce was conducted largely within limited and familiar circles, where personal relations kept risks within bounds.<sup>76</sup>

A second important advantage of maintaining regular relations with customers was that it generated trust, and with that trust came recommendations, guarantees and credit. Trust was perhaps even more important than capital, the main function of which indeed was – and is – to generate trust, and thereby credit. Money is trust; the equation is reversible.

An important weapon in competitive struggle was knowledge: knowledge of the market and of the commodity. To be able to operate adequately, the entrepreneur had to know what qualities, at what prices, were being supplied and demanded on the different markets. He had to be informed about the quantitative developments of demand and supply. A single entrepreneur could not be a jack of all trades; the need for knowledge led to a certain degree of specialization by commodity and by area of purchase and sales. The term specialization must not be understood too narrowly here. Much depended on the personality of the entrepreneur and the possibilities of the market. The businessman had to find an equilibrium between the benefits of expertise and the dangers of 'monoculture'; between the benefits of spreading his interests over a number of product-market combinations and the dangers of losing contact with the market. In the eighteenth century the business of Jan Isaac de Neufville & Company specialized in the linen trade between a number of German districts, Flanders and the Republic on the one hand, and England and (again) the Republic on the other. As problems arose in the linen trade, he tried his luck in the related ash trade.<sup>77</sup> In the seventeenth century the main business of the enterprise of Jacob, Louis and Hendrick Trip involved the arms, iron and tar trades.<sup>78</sup> In general, sideline ventures were numerous, but of secondary importance in proportion to total turnover. That does not alter the fact that they were necessary aspects of a commercial business. They resulted from opportunism, from an inclination to experiment, from the necessity to oblige

business relations – even if these relations sometimes had wishes that had little to do with the established specialization: the friendship had to be preserved.<sup>79</sup>

Knowledge and relations were durable possessions. Like financial capital, they were of great importance to the business, and consequently to the family. To a large degree they determined the income of the entrepreneur and consequently the social position of his family. Like capital, knowledge and relations had to be maintained for the good of the family. This makes Prak's above-cited conclusion very concrete. The obligation to pass on one's social position to the next generation meant that the entrepreneur passed on the whole business; that is, the capital, the knowledge, the relations. As a rule, a businessman succeeded his father in the enterprise, chose in any case the same profession and the same specialization as his father, and thus made use of the knowledge, experience and relations of the preceding generation. For the same reason, many entrepreneurs married a daughter of a family in the same line of business, in order to draw into the family relevant knowledge and relations of a third party. These social mechanisms have not been explicitly studied, but many indications of their existence can be found in the literature.<sup>80</sup>

Perhaps less fundamental, but nevertheless indispensable for conducting a business, was limiting of costs and damage. The most obvious risk of damage involved commodities that were transported by sea. The entrepreneur reduced this risk by insuring the commodities and by spreading them over several vessels.<sup>81</sup> Cost items were transport (freight rates, packing, tolls, harbour dues, insurance), storage and processing (rent, wages, depreciation on capital goods) and communication (postage, gifts). These costs could be controlled and limited by exerting demand for the production factors and facilities in question where supply and competition – with quality meeting the requirements – were comparatively large, and prices comparatively low. To limit damage and costs, entrepreneurs sometimes joined forces to lobby and provide information. Such an organized interest group was the Directorate of the Muscovy Commerce (*De Directie van de Moscovische Handel*), which came into being towards the end of the seventeenth century.<sup>82</sup>

Customer relations and specialization, reducing costs and limiting damage – these were the main patterns of all entrepreneurs. The patterns were essentially of a defensive nature. They led to protection and consolidation, at most to marginal growth in profits and turnover of the enterprise. But they provided a more or less safe basis for improvisation and experiments. Supported by the certainties of these fixed patterns, the entrepreneur could go in search of real expansion. He could choose to speculate on a favourable price development by buying in advance or by keeping a larger stock than was necessary for the normal progress of the business. He could try to acquire a monopoly. He could innovate. To what extent he did this was determined by many factors. Entrepreneurs differed in wealth, in natural ability, in social and economic background, in fortune, in temperament.

Some were more enterprising, expansive, innovative, inclined to speculate or even gamble, than others. There were some to whom adventure was a more important motive than security or continuity. This all led to great variations in behaviour.

#### *Business location requirements*

For conducting his business the international entrepreneur needed a wide range of factors, commodities, services and facilities. The cornerstones of his enterprise – capital, knowledge, relations – were not tied to place. Other elements were. The business required a location from which purchase areas and sales areas could be reached. For conveying merchandise, availability of means of transport, especially seagoing vessels, was indispensable. No less essential were good means of communication with buyers, suppliers, competitors – in short, a well-functioning international exchange of information, especially postal communication and general news service<sup>83</sup>. Also very important was the availability of services in the field of insurance and international transfer of payments, as well as the presence of strong and reliable public authorities that offered legal security, safety and protection – if necessary military – of commercial interests. For commercial enterprises the presence of processing industries offered the possibility of adding value to the commodities traded; and industry required maximum availability of raw and auxiliary materials. Finally, all this implies that the place where the international entrepreneur established a business needed access to a large pool of labour that could be deployed outside primary production.

The requirements of the innovating entrepreneur did not fundamentally differ from this general picture. More than other entrepreneurs, he needed an environment where the most advanced scientific knowledge, technology and abilities were available, and also relatively good educational facilities; a place where resolution and courage could be displayed in a responsible way without deteriorating into rashness.

To be able to operate efficiently and competitively, the international entrepreneur had to settle in a place where the supply of all these factors, commodities, services and facilities was optimum. To conclude that the business climate of the Dutch Republic met the needs of the entrepreneur relatively well is no doubt correct, but explains little. The question is: What characterized and determined this business climate? How did the Republic come to exert such great attraction on the international entrepreneur, and to meet his requirements so well? The question requires a closer look at the operational framework of entrepreneurial activities.

#### *4. The operational framework for reducing risks*

##### *Government policies: Dutch mercantilism*

Economic historiography has not been quite clear about the exact nature of the economic policies of the United Provinces. The standard opinion reads somewhat negatively: nothing was done that could have harmed the interests of international wholesale trade.<sup>84</sup> Policymakers had no well-considered principle to rely on, no well-defined goal to focus on. Consequently pragmatics prevailed, with the result being consistent inconsistency. Problems were dealt with as they came along.

Trade regulation and tariffs in particular seem to be a case in point. When the United Provinces took shape at the Union of Utrecht in 1579, the system of import and export duties was put on an almost purely fiscal basis, thus ensuring the free commodity flow that the Dutch entrepôt trade required. There were, however, for some reason or other, notable exceptions. The herring industry, for instance, was protected and very much subject to public and semi-public regulation. So was the cultivation and processing of madder. Papermaking profited from restrictions on the export of rags.<sup>85</sup> It would appear that such exceptions were due to the effective intervention of particular interests or pressure groups. But although the matter as a whole sometimes came up for discussion, nothing was ever changed to any significant extent. It is to be concluded that tariffs were generally fixed at a low and stable level – a situation that no doubt was to the advantage of mercantile interests. It lowered entrepreneurial risks instead of increasing them.

In fact there is more to be said.<sup>86</sup> In the absence of any clear and definite tendency to tariff protection of national interests, it has been erroneously maintained that the Dutch were actually exceptional in abstaining from the mercantilism which prevailed in the rest of Europe at that time. But mercantilism comprises more than a trade policy of a certain nature. Mercantilism is to be considered as a system of government regulation for financing public expenditures on the one hand and granting economic rents to holders of state-sanctioned monopoly rights on the other. As a rule, mercantilism has been considered as a policy of the central state, a product of the monarchies in early modern times. Absolutism, in turn, was taken as a form of unified government rule, in this respect hardly differing from the government of modern nation-states. But in those days the concept of 'the common good' as the basic goal of government policies was still far removed from the modern idea of 'public interest'. In practice if not in theory, government rule was everything but absolute in the face of the prevailing impenetrable complexity and extreme variety of rights, legalities, privileges, traditions and customs. These were protected by all sorts of local and regional authorities and social institutions. In these circumstances, what goes by the name of national policy was nothing but the unpredictable outcome of the continuous power struggle between numerous privileged communities, groups and estates of various rank, position, status and class.

In this respect the weak central rule of the federation of autonomous republics making up the United Provinces hardly differed materially from absolutist government elsewhere. It distinguished itself, however, by the high degree to which policymaking was allowed to remain in the capable and expert hands of the entrepreneurial mercantile group itself. Commerce, trade, shipping and the economy in general therefore actually enjoyed high and sometimes even first priority as a matter of course. In the face of the prevailing fragmentation and compartmentalization of the market economy, any factually centralized economic policy could, however, easily do more harm than good. Political conditions as well as reasons of economic efficiency favoured leaving the matter in the hands of local and regional authorities, who were in an excellent position to judge what would best serve the commercial interests of their immediate community. This was precisely the case in the Netherlands. The flexible governing bodies that ruled towns, largely recruited from the ranks of commercial and economic experts themselves, gave – much more so than did the central government – substance to the many-faced Dutch mercantilism of the age. It was an unregulated system that nevertheless contributed – perhaps even decisively – to reducing the costs of mercantile protection and to promoting Dutch international wholesale trade. Of course such a situation contained dangers of developing into less desirable and even harmful directions. Conflicts of interest among towns and regions could easily turn into the wrong sort of local economic protection. But on the whole it would appear that the benefits prevailed. In an economic atmosphere that was generally sympathetic to them, entrepreneurs must have found it relatively easy to come to the right sort of decisions on reducing risks – sometimes even at the cost of other interests. By financing mercantile institutions with municipal government funds, by urban domestic-price and wage regulations, by instituting a tax regime conducive to trade and by legally subordinating rural economies, economic risks were definitely shifted onto the shoulders of economic agents such as consumers, taxpayers, wage earners and farmers. It implied the creation of ‘invisible’ economic rents from which international wholesale traders were profiting. In this sense the Dutch overseas expansion of the first half of the seventeenth century actually reflected the efforts of the community as a whole. As long as general welfare levels were rising simultaneously, it was probably the best course the United Provinces could have followed at that time.

#### *Institutional change*

It has often been maintained that the rise and development of the Dutch entrepôt trade were established by means of private enterprise and free competition. Yet, it has to be borne in mind that commercial expansion would not have been anything like it actually was had the business community failed to obtain the close cooperation of government authorities – at times even obscuring the borderline between the private and public sectors.<sup>87</sup> Thus, private enterprise secured an

excellent network of infrastructural and institutional provisions, at various levels, pushing and supporting its drive for overseas expansion. Witness the government charters of 1602 and 1621 for the trade monopoly of the Dutch East and West India Companies, whereby business itself at times acquired semi-public status. It is true, however, that these cases were the exception rather than the rule. But the Directorates for the Levant Trade and Navigation, established by a number of towns in the 1620s at the request of prominent Levant traders, enjoyed public authority while remaining private associations.<sup>88</sup> Although these bodies, staffed by interested merchants, were not directly involved in Mediterranean trade and shipping, they effectively supervised and controlled it in order to limit the extremely high risks in these waters, much infested with war, privateering and piracy. The Dutch government lent a further helping hand by establishing, between 1610 and 1625, about twenty diplomatic and consular posts in these dangerous areas, with the goal of safeguarding the security of the much-plagued merchant marine against maltreatment and official or unofficial robberies. Significantly, Dutch diplomats at these posts were left to see to their own rewards. Their income derived from the right to collect shipping duties, supplemented by the proceeds of illicit trading. Although not the best way of reducing risk through official channels, it was all that was possible under the circumstances.

At home, matters were taken care of a bit more efficiently.<sup>89</sup> Improvements comprised the establishment of municipal exchange banks – the most influential being the Bank of Amsterdam (1609) – for facilitating and stabilizing monetary transactions; the foundation of the bourse for commodity exchange, with its regular price publications; the perfection of minting; fiscal and legal provisions; the construction of port, harbour and storage facilities; weighing houses for quantity and quality control; canals and other domestic waterways; the extension of postal services, inland transports, wagon and barge services; pilotage; the organization of public and semi-public services; the appointment of sworn officials and the employment of civil servants and guild associations, charged with specialized tasks and functions; and too many other things to mention separately. Not all of this was new; in fact some of it went back to medieval times. But at the beginning of the seventeenth century a mixture of well-established traditions and recent innovations had resulted in a comprehensive infrastructure of semi-private and semi-public provisions, serving the interests of trading and shipping. It moulded the framework for the development of early modern capitalist institutions and practices such as brokerage, joint-stock enterprise, banking, insurance and speculative financial trading. It implied momentous changes which increased the efficiency of the traditional Dutch market economy, and actually even transformed its operation. As a matter of fact, the changes were so sweeping that Dutch society passed into an entirely new and exceedingly creative phase of its history. The effects and consequences of the changes continue right into the present day.

At first sight this radical change appears to have been confined to the dynamic urban centres of the western provinces of the Dutch Republic. But, as other contributions to this book make abundantly clear, the countryside was also part and parcel of the drive for the continuous perfection of the market economy. At the end of the sixteenth century, land reclamation projects acquired a hitherto unknown momentum thanks to the introduction of new drainage technologies and, owing to the penetration of urban capital into rural areas, new forms of land use. It follows that the domestic supply of raw materials, livestock and foodstuffs – for export as well as for production and consumption at home – increased significantly. Agrarian expansion and rising agrarian productivity allowed the relatively high population growth that had begun in about 1500 to continue. Disastrous famines and devastating mortality rates were largely things of the past, as fundamental bottlenecks were removed and growth barriers were lowered. The agrarian basis of Dutch overseas expansion was broadened and strengthened by the further development of rural industries such as papermaking, textiles and shipbuilding. The impressive park of industrial windmills in the Zaanstreek to the west of Amsterdam developed an unparalleled pattern of specialized manufacturing, very much to the benefit of the international competitive edge of Dutch enterprise. Urban industries and manufacturing developed in the same way, profiting also from rising imports of raw materials that had been virtually unknown before. But a main factor of industrial growth was the relatively elastic domestic supply of industrial agrarian raw materials – such as colseed, hemp and flax – and the large-scale exploitation of domestic energy resources in the peat districts. This was largely achieved through the innovative activities of enterprising urban capitalists and financiers, busying themselves with the introduction of joint stock and of trading companies for the purpose of agrarian investment and canal construction. Their success, as well as the continuing efforts of generations of productivity-conscious farmers, made a myth of the often-told story that the Netherlands economy was poor in raw materials. Actually, the reverse was the case. In the first half of the seventeenth century the combination of domestic production and imports of raw materials served as a cornerstone of the rise and development of a truly remarkable form of early modern rural and urban industrialization.

The Dutch economic overseas expansion of those days is still viewed as having been mainly commercial. Mercantile it may indeed have been. But it was certainly not exclusively commercial, considering the balanced growth that included the primary and secondary sectors of the economy. Such a broad expansion certainly required a widespread and consistent spectrum of entrepreneurial decision-making.

*Productive resources: labour and capital*

Was entrepreneurial decision-making in the practice of everyday life really such a risky affair as it appears to have been in the face of the very unsettled nature of

pre-industrial economies in general? Or was the supply of productive resources in the Netherlands of such a special kind that entrepreneurs had less difficulty than elsewhere to come the right and proper decision?

It is easier to ask these questions than to answer them, because the supply of labour and capital is a very dynamic affair that depends on a great number of continuously changing variables. It is therefore hardly possible to start the analysis at any fixed moment in time, subsequently taking that moment as a point of calibration for solving the problem. But one may be justified in saying that at the end of the sixteenth century the labour and capital markets of the United Provinces were very much on the move in terms of quantitative expansion. Let it be assumed that supply was the prime mover, with demand following.

Labour in particular has, until very recently, received little attention as a factor in early modern Dutch economic development. In his contribution to this volume Jan de Vries deals with the matter in a new and very promising way. The reader may be referred to his discussion. Here it may suffice to note that De Vries considers the labour markets – note the plural! – of the Northern Netherlands by 1560 to have already been large and flexible in comparison to elsewhere. According to him, the labour demand and supply curves both shifted drastically to the right after the 1570s. It would thus appear that labour at that time presented no serious bottlenecks, allowing entrepreneurs to go ahead in a more carefree way than elsewhere. The same conclusion is reached in a recent study by Van Zanden.<sup>90</sup> In his rather global view, population growth and immigration contributed at that time to an exceptionally high elasticity in the supply of labour, especially in the province of Holland. The two authors differ, however, in their opinion on what happened during the seventeenth century. They agree that the stagnation of the Dutch economy started in about 1670 and that serious deficiencies in the supply of labour were at least partly to be blamed. But Van Zanden maintains that the scarcity of labour had already become a more or less structural bottleneck in the 1620s. In his opinion the earlier increase of the urban labour force had been a consequence rather than a cause of economic expansion. Whatever the case may be, from the point of view of entrepreneurial opportunities, it is difficult to escape the conclusion that the quantitative and qualitative development of the Dutch labour market during the sixteenth century helped substantially in facilitating decision-making. In this sense it was instrumental to the rise of the Dutch economy. Despite many shortcomings, inefficiencies and imperfections, labour markets in the Netherlands were more developed, better organized and more flexible than in most other European areas. As a consequence, entrepreneurs could feel more assured of the outcome of their operations.

It would be difficult to reach a different conclusion in the case of capital supply.<sup>91</sup> It is generally accepted that the manifest structural rise in the exploitation of investment opportunities since the 1580s was in no way slowed down by lack of capital. During the preceding decades the economy had been generating substan-

tial additions to the capital stock. A relatively large part of these additions accumulated no doubt in the time-honoured ways of more or less invisible family savings that were actually employed in a great variety of ways, ranging from hoarding and government securities to all sorts of productive expenditures in agriculture, industry, shipping and trading. In those days capital investment still had to do without any significant support from capital markets. In these circumstances investors had relatively great difficulty in properly spreading the risks of capital employment over productive opportunities. Investment was still largely a matter of adventurous financial speculation.

But by the beginning of the seventeenth century it was evident that increased investment had found additional sources for simple capital accumulation. Interest rates entered a secular phase of decline, indicating that, in particular, short-run credit operations and merchant banking had lowered the barriers that had put a check on the development and expansion of well-organized money and capital markets. During the course of the seventeenth century these markets were perfected to a higher degree by means of institutional reforms and the introduction of a wide variety of new financial methods and techniques. Money and capital markets became more efficient, in this way lending support to the growth and flexibility of the supply of capital. Without this development the stock of capital would have been employed to a lesser degree and in worse ways. This is not to say, however, that dealing and trading in money and capital markets had developed sufficiently to consider it as a separate and fully specialized branch of business. To a very large extent it remained part of the commercial enterprise of wealthy merchants, ready to assist their relations in financing their buying or selling. Their short-run credit facilities were, however, crucial to the workings of the Dutch *entrepôt* trade, because it was precisely in this way that the risks of inventory investment were spread and facilitated. And inventory investment was – as already indicated – at the very heart of the Dutch *entrepôt* trade, which in turn was the focal point of the commercial expansion of the Dutch economy.

## NOTES

\* Sections 1 and 4 were written by Klein, sections 2 and 3 by Veluwenkamp.

- 1 The following considerations are partly derived from: B. Supple, 'The nature of enterprise', E.E. Rich & C.H. Wilson (eds), *The Cambridge economic history of Europe V: The economic organization of Early Modern Europe* (Cambridge 1977) 394-462 [= ch. VI]. Some of them, however, go back to earlier studies by one of the authors, P.W. Klein, more or less summarized and elaborated in J.H. van Stuijvenberg (ed.), *De economische geschiedenis van Nederland* (Groningen 1977) 79-119.
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- 6 N.W. Posthumus, *De uitvoer van Amsterdam, 1543-1545* (Leiden 1971).
- 7 T.P. van der Kooy, *Hollands stapelmarkt en haar verval* (Amsterdam 1931) 3-6.
- 8 P.W. Klein, *De Trippen in de 17e eeuw; Een studie over het ondernemersgedrag op de Hollandse stapelmarkt* (Assen 1965) 10-15.
- 9 Klein, *De Trippen*, 15.
- 10 Van der Kooy, *Hollands stapelmarkt*, 6; Klein, *De Trippen*, 10.
- 11 P. Jeannin, 'Les interdépendences économiques dans le champ d'action européen des Hollandais (XVIe-XVIIIe siècle)', M. Aymard (ed.), *Dutch capitalism and world capitalism* (Cambridge/Paris 1982) 164.
- 12 P.W. Klein, 'Dutch capitalism and the European world-economy', M. Aymard (ed.), *Dutch capitalism and world capitalism* (Cambridge/Paris 1982) 89-90.
- 13 H. Klomp maker, 'Handel, geld- en bankwezen in de Noordelijke Nederlanden', *Algemene geschiedenis der Nederlanden* (Bussum 1979) VI: 60-61.
- 14 Israel, *Dutch primacy*, 5, 27, 34.
- 15 J.I. Israel, 'The economic contribution of Dutch Sephardi Jewry to Holland's Golden Age, 1595-1713', *Tijdschrift voor geschiedenis* 96 (1983) 506, 508.
- 16 H. van der Wee, 'Handel in de Zuidelijke Nederlanden', *Algemene geschiedenis der Nederlanden* (Bussum 1979) VI: 86.
- 17 H. Soly & A.K.L. Thys, 'Nijverheid in de Zuidelijke Nederlanden', *Algemene geschiedenis der Nederlanden* (Bussum 1979) 27-29, 48; Van der Wee, 'Handel', 89-93; J.A. van Houtte, 'De zestiende eeuw (1485-1585)', J.H. van Stuijvenberg (ed.), *De economische geschiedenis van Nederland* (Groningen 1977) 70-71.
- 18 Van der Wee, 'Handel', 89, 92.
- 19 Israel, *Dutch primacy*, 5, 7, 27-28; W. Brulez, 'Scheepvaart in de Zuidelijke Nederlanden', *Algemene geschiedenis der Nederlanden* (Bussum 1979) VI: 124-126.
- 20 Israel, *Dutch primacy*, 17, 18, 20; Van Houtte, 'De zestiende eeuw', 68-71.
- 21 Israel, *Dutch primacy*, 6.
- 22 Israel, *Dutch primacy*, 18, 19, 22; Van Houtte, 'De zestiende eeuw', 70-71.
- 23 Israel, *Dutch primacy*, 19, 49.
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- 25 Van Houtte, 'De zestiende eeuw', 71.
- 26 Van Houtte, 'De zestiende eeuw', 71.
- 27 Israel, *Dutch primacy*, 71.
- 28 Israel, *Dutch primacy*, 27; Klomp maker, 'Handel, geld- en bankwezen', 60.
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- 30 Israel, *Dutch primacy*, 29-30, 41-42; Israel, 'The economic contribution', 506, 508; Brulez, 'Scheepvaart', 128.

- 31 Israel, *Dutch primacy*, 30, 41; Brulez, 'De diaspora', 281.
- 32 Israel, *Dutch primacy*, 32-34.
- 33 P.W. Klein, 'De zeventiende eeuw (1585-1700)', J.H. van Stuijvenberg (ed.), *De economische geschiedenis van Nederland* (Groningen 1977) 82-83.
- 34 Israel, *Dutch primacy*, 42.
- 35 Israel, *Dutch primacy*, 44-46, 54; V.A. Kordt, 'Ocerk snosenij Moskovskago gosudarstva s Respublikoju Soedinennych Niderlandov po 1631 g.', *Sbornik Imperatorskago Russkago Istoriceskago Obshcestva* (St. Peterburg 1902) tom 116: I-CCCXLVII; E.H. Wijnroks, 'Anglo-Dutch rivalry in Russian trade in the latter half of the sixteenth century; A historiographical essay', J.Ph.S. Lemmink & J.S.A.M. van Koningsbrugge, *Baltic affairs; Relations between the Netherlands and north-eastern Europe, 1500-1800* (Nijmegen 1990) 413-432.
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- 37 Brulez, 'De diaspora', 288.
- 38 Klein, 'De zeventiende eeuw', 96-97.
- 39 Israel, 'The economic contribution', 506, 508.
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# IV

## THE LABOUR MARKET

by

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### *I. Introduction*

The analysis of labour markets in the Northern Netherlands necessarily involves us in a study of the general and the particular. The region could hardly avoid feeling the impact of powerful economic forces sweeping over all of Europe during the so called 'long sixteenth century' at the same time it assumed a special place in the larger international economy whereby the general developments were modified – sometimes softened, sometimes accentuated – to produce a labour market with unique opportunities and unique problems.

All of Western and Central Europe experienced a substantial population growth in the two centuries after 1450, and this demographic vitality was coupled with dramatic growth of the money supply and an irregular, but in the long run equally dramatic rise in the price level. This 'price inflation' was fuelled first by new mining activity in Central Europe, but after the 1530s the newly discovered silver mines of Mexico and Peru brought an acceleration to growth of the money supply. The uneven spread of the new supplies of precious metals through Europe put pressure on monetary systems of various countries, provoking a chain reaction of devaluations, which further increased price levels. Finally, the growth of population itself, by increasing the demand for food and other necessities faster than supplies could increase, stimulated price inflation in its own right.<sup>1</sup>

The rapid growth of population caused the land-labour ratio to deteriorate, bringing about a decline in the marginal productivity of labour in agriculture and, hence, in the real earnings of labour. Labour in the industrial sector, where the modest capital stock per worker caused something approaching constant returns to prevail, did not suffer sharply diminishing productivity. But in an overwhelmingly agrarian Europe the fate of agriculture was decisive: food prices rose rapidly

while prices for industrial goods lagged behind. As the terms of trade deteriorated for the non-farm sector, the purchasing power of wages declined.<sup>2</sup>

The long sixteenth century witnessed a powerful economic expansion throughout Europe, but this rarely translated into economic growth of the modern type, whereby per capita real incomes rise on the strength of productivity-enhancing investment and organizational improvements. Most economic historians see the strictures of Malthus emerging from archival sources of this period:<sup>3</sup> as population grew, the prices of necessities rose far more rapidly than wages, causing nearly every calculation of purchasing power ever attempted to reveal a sharp decline.<sup>4</sup>

The history of labour markets in the Northern Netherlands must be placed in this larger European context. When we do so, questions immediately arise about how the exceptional characteristics of the Dutch economy might have caused the experience of Dutch labour to differ from the common pattern. Here, we will focus on three such questions.

First, the labour market already in the early sixteenth century was large and largely free of feudal constraints. Some 25 percent of the entire Northern Netherlands population resided in towns, and in Holland the figure already exceeded 40 percent. Wage labour played a larger role here than in many other European countries three hundred years later. How did these unusual characteristics influence the workings of the pre-industrial labour market?

Second, the high and rising level of urbanization was linked to an ongoing transformation of agriculture, especially in the coastal provinces. The agricultural sector absorbed but a fraction of the additional labour created by the rapid growth of population, while its productivity rose as a result of large-scale investment, land reclamation, and specialization. If the agricultural sector of the coastal provinces escaped the Malthusian pressures that afflicted the rest of Europe, should this not have affected the terms on which labor was supplied and the prices of agricultural products?

Third, and finally, the European economic expansion of the long sixteenth century was felt in the Netherlands with special intensity. In the course of this period it emerged from its peripheral position *vis-à-vis* Antwerp to become the dynamic center of the European economy. How did labour fare in this precociously capitalistic economy: did it share in the prosperity of the 'Golden Age' or was it the necessary victim of the accumulators of capital?

The first question raises the issue of whether it is legitimate to approach the terms and conditions of employment as a market phenomenon. Many historians regard the employment of labor as a social act governed by 'tradition', where the relations of patron and client and any number of non-economic considerations overwhelm the economic dimension of working for wages. Still others see the labour market as entirely one-sided; labourers were without the bargaining power to receive anything more than a subsistence wage. Adherents of both positions find in the 'stickiness' of wage agreements, their resistance to change in the face

of short-term changes in the economic environment, evidence that market forces played little role in the determination of wages. Is there reason to believe the Netherlands to have been different?

The second question has two aspects. To the extent that a productive, specialized agriculture prevented the decline of labour productivity and limited inflation of Dutch food prices it could soften the real wage deterioration that afflicted all of Europe. This possibility has not yet been studied in much detail.<sup>5</sup> But the effect of this process on the supply of labour to the non-agricultural sector *has* attracted interest, and the opinions are divided. On the one hand, labour can be attracted away from a productive agricultural sector only with high wages (i.e., the opportunity cost of labour is high); on the other hand, an agricultural sector made productive by specializing in land-extensive production will expel labour, making the supply of labour to potential employers very elastic. This leads directly to the third question, and on that question the disagreement is complete.

Economic historians divide between 'optimists' and 'pessimists' (not to mention the many 'agnostics') on the issue of whether workers benefited from the economic expansion of the long sixteenth century. Ironically, the two camps fasten on the same prominent characteristic of the Dutch labour market in arguing their cases.

The optimist position can be traced back at least to the turn-of-the-century Germany scholar Otto Pringsheim. He advanced the proposition that 'the seventeenth century was a time of economic brilliance for Holland that has never returned, and this forceful upswing also worked to the benefit of the labourers.'<sup>6</sup> J.A. van Houtte expressed, without elaboration, a similar view in his *Economic History of the Low Countries* in 1977 when he wrote, 'Rich or poor, the Dutch could hardly have found better conditions anywhere else'.<sup>7</sup> Both historians regarded the large-scale migration into the cities from the countryside and abroad as a telling fact in support of their optimistic position. Surely, they reason, these multitudes were attracted by opportunities and material conditions superior to those available at home.

The pessimist position also rests on an interpretation of labour migration to the cities of Holland. W. van Ravesteyn in 1906, Charles Boxer in 1965, J.G. van Dillen in his 1970 textbook *Van rijkdom en regenten*, and J.L. van Zanden in 1991, all held that the vigorously expanding demand for labour elicited a supply so elastic that labour markets were chronically over-supplied. Their insatiable demand for labour notwithstanding, employers could unilaterally determine the wage level; they were, at any rate, free to set wages at or below subsistence.<sup>8</sup>

This brief review of the literature makes clear that the disagreements rest not so much on the empirical evidence of historical wages and prices, but on differing models of how the pre-industrial labour markets actually behaved – what determined the elasticity of supply, and in what social context were labour contracts, explicitly or implicitly, determined. Additional wage data can help advance this

debate, but by themselves new data cannot dispel dearly held preconceptions about the motivations and options of the participants in the labour market.

## *2. The early sixteenth century*

The archival records of wage payments are not scarce, but they are limited in their coverage. The vast majority of usable records pertain to construction labour and similar outdoor, manual work. Moreover, the documents refer almost exclusively to such labour in the employ of cities, churches, or other public bodies. Construction labour has the notable advantage of being quite uniform across space and through time. This makes comparisons possible. But, it is possible that the supply and demand for this type of labour differs in certain periods from industrial or agricultural labour.

The daily wages for skilled and unskilled construction and manual labour for the periods 1460-1480, 1510-1525, and 1550-1559 are presented in Table 1. Already in the period 1460-1480 wage rates varied considerably by region, and already the highest wages in the Burgundian/Habsburg Netherlands appear to have been paid in Holland. When unskilled labourers earned 3 stuivers per day in Haarlem, Woerden, and Leiden, they earned only 2 stuivers in Utrecht, Bergen op Zoom (and elsewhere in Brabant), and even less in the IJssel city of Zutphen.

This early evidence of regional differences that would persist into the twentieth century is in some respects surprising. 'Holland's Advance/Hollands voorsprong' in the fifteenth century is thought to have been based on factors that made wage labour abundant and cheap in comparison to other regions. The deteriorating hydrographic conditions caused agriculture to become more land-extensive, stimulating out-migration. This is thought to explain the extraordinary rate of fifteenth century urbanization, whereby Holland came to be endowed with many, mostly small, cities filled with 'rural refugees' seeking employment in industry, fishing, transport, and commerce.<sup>9</sup> Besides this reservoir of cheap labour, the countryside, especially in North Holland, appears to have been home to thousands of smallholders who supplemented their inadequate agricultural earnings with seasonal labour in fishing, ocean shipping, dike maintenance and other infrastructural activities.<sup>10</sup>

The supply of wage labour in both city and countryside is thought to have been highly elastic in Holland, but the wage level was, even before 1500, the highest in the Netherlands. More consistent with this characterization of the labour market is a second feature of Table 1: the nominal wages of unskilled labour in Holland do not rise very much in the period 1460-1550. The wages for unskilled labour rise further in several other regions, reducing the gap between Holland and the other regions by 1550. Moreover, the wages for skilled labour rise more rapidly than those of the unskilled, bringing about a substantial increase in the 'skill

premium' – the extent to which skilled workers' wages exceed those of the unskilled. The skill premium in Holland rose from some 50 to 67 percent in the 1460-80 period to over 80 percent in the period 1525-1550.

This important development suggests that unskilled labour was relatively abundant, a suggestion reinforced by direct evidence of large work forces massing at ports and drainage projects to carry out seasonal activities and temporary projects. For example, in 1510 the Hoogheemraadschap van Rijnland needed hundreds of workers to repair breached dikes between Amsterdam and Spaarndam. Its records show that 605 workers came to the work sites, mainly from North Holland villages. The 4 stuivers per day paid to the dike workers may well have reflected the pressing need for labour faced by the drainage board (the prevailing wage at Spaarndam fell to 3 stuivers in 1520-1523). Less was paid to young, old, or otherwise less able workers (of 394 labourers, the 259 *gravers* received 4 stuivers, the rest, mostly *jonge en oude burendragers*, were distributed across a range of wage rates stretching from 3.5 stuivers to 1 stuiver). Those who supplied the 106 boats needed for the movement of earth and building materials received 1 or 2 stuivers per day for boat rental, which suggests the high price of capital relative to labour in this economy.<sup>11</sup>

The high relative cost of capital goods is more clearly apparent when the drainage board required horses and wagons. The daily payment for the use of a horse and wagon plus the wage for a man, was about 2.5 times the wage for a man alone. After 1545, when it becomes customary to hire wagons with two horses, the payment was almost always three times the daily wage for unskilled labor. The hire of a horse cost nearly as much as the wage for a man, and this relationship persisted throughout the period under study in this volume.

Dike works near Callantsoog, in northernmost North Holland, illustrate the way wage labor fit into the agrarian economy. In 1556-1557 the repair and improvement of the dikes was contracted out to eight contractors, many from far away; the over 200 day laborers, *slechters*, were agricultural laborers and other more-or-less landless men from throughout the region. They earned 6 stuivers per day, then equal to the highest wages for unskilled labour in the Netherlands. They were accompanied in the fall, after the harvests, by over 200 *karrers*, mostly farmers in possession of a horse and cart, who earned 18 to 20 stuivers per day in compensation for their labour and the use of their capital goods.<sup>12</sup>

The sixteenth century casual labour market in the maritime zone was large, but complex. Those in charge of the reclamation of the Nieuw Beijerlandpolder in South Holland in July of 1582 calculated that their labourers from *below* the rivers would continue to work for a time yet, until called away by the harvest. But the *north* Hollanders, they noted, were already drifting away to sign on with herring and merchant vessels.<sup>13</sup> In general, the herring fishery, the Baltic trade, peat digging, and dike repair all had their seasonal emphasis, making it possible for

casual labourers to combine two or more of these activities in an annual employment cycle.<sup>14</sup>

Not all Dutch wage workers were to be found in the casual labour market, of course. Many of the seamen of Waterland and West Friesland were wholly occupied with the growing Baltic trade, as were many fishermen in the expanding ocean fisheries. In both cases, the crews often worked regularly for the same skippers, often for a share of the profit rather than for wages. In the cities the industrial sector formed the largest source of employment, but, unlike shipping and fisheries, this sector was everywhere in profound decline. We know little about industrial wages, often piece rates, but it is not unlikely that wage levels were higher in the rural centers of shipping and fishing than in the stagnant industrial cities of central Holland, let alone the declining cities of the eastern provinces.

Nominal wages in the century before the 1560s were certainly 'sticky' – they were adjusted only at substantial intervals – but they were not unchangeable. Between 1460 and 1560 skilled craftsmen's wages approximately doubled, while the wages of the unskilled rose more modestly, by 50-67 percent. But these increases in the nominal wage – concentrated in the 1490s, a period of currency instability in the eastern provinces, and the 1540s, when the Antwerp economy was growing with special vigour – universally failed to keep pace with the rising cost of living.

The purchasing power of wages was unusually volatile in the period 1460-1500. The high real wages that prevailed throughout Europe in the century after the Black Death then gave way to wide swings in food prices, as harvest failures and chronic warfare interrupted economic life. After 1500 these problems did not disappear, but the volatility they generated came to be subordinated to the powerful long term, and pan-European, forces, discussed in the introduction to this essay, pushing the price level upward. Real wages for skilled and unskilled workers alike tended to decline in the first 60 years of the sixteenth century (see figures 1 and 2).

### *3. Labour during the Revolt*

In a European context, the labour markets of the Northern Netherlands before the 1560s stood out by virtue of their large size and flexibility. Labour was relatively unencumbered by institutional constraints; nor was it often in possession of strong guild protection. This exceptional status does not appear to have exempted Dutch labour from the long-term real wage trends that affected other regions. It is possible that the growing import of cheap Baltic grain and the economic stimulus emanating from prosperous Antwerp softened the impact of rising prices, but the

current state of our knowledge is insufficient to make more nuanced statements with confidence.

After the 1570s everything changes; the Northern Netherlands, led by its maritime provinces, pursued new political and economic opportunities whereby the unique internal economic characteristics of the region were able to benefit from a new external economic environment. The result was a veritable explosion of economic activity in which both the demand curve for and the supply curve of labour shifted radically to the right.

The explosion was most intensely felt in Holland. There, in the half century between the 1570s and 1620s, the population nearly doubled from about 350,000 to 700,000, with natural increase and immigration playing roughly equal roles; the urban share of this population rose from about 40 to nearly 60 percent (increasing the percentage of the labour force likely to work for wages); and the length of the working year increased from about 260 to 307 days (a consequence of the reform of religion). Natural increase, immigration, urbanization, and reformation all combined to flood the Republic with wage labour: the effective supply of non-farm labor grew by nearly three percent per year in the period 1570-1620.

If the demand for labour had not also increased at least as fast as did the supply, the equilibrium wage would certainly have fallen – as we know it to have fallen in this period in surrounding countries where population growth was not nearly so rapid. That is, the rising price level may have forced nominal wages up to some extent in this period, just as it probably did in the century preceding 1560. Permanent upward shifts in the price level in 1569-1575 and 1591-1601 were especially intense, and almost certainly forced some compensatory wage concessions from employers. But in other countries, as in the Netherlands before 1570, these concessions had been insufficient to maintain the earlier level of purchasing power. After 1570 nominal wage increases in the Republic more than kept pace with price increases, causing real wages to regain its early-sixteenth century high point, and then some.

Consider the demand for labour at the drainage installations maintained by the Hoogheemraadschap van Rijnland at Spaarndam and nearby Halfweg. Craftsmen's wages, which had stood at a very high 6 stuivers per day in 1510-1515, actually fell to 5 or 5.5 stuivers in the 1530s. In the 1540s they rose to 6 then 7 stuivers, where they stood until 1565. In that crisis year they suddenly jumped to 9 stuivers, and in 1578 to 12, and in some cases 15. The latter wage was not long maintained, for 12 stuivers continued to be the prevailing wage for carpenters and masons in 1587-1588. Then began a new round of wage increases: to 14 stuivers in 1589, 16 st. in 1590, and 18 st. in 1593. The next general wage increase came in 1628.

Wages for the large numbers of unskilled workers hired, by the same drainage board, usually on a seasonal basis, rose in the same pattern (from 5 stuivers to 6 in 1565, in stages to 9 st. in 1583, and then from 9 st. in 1591 by stages to 14 in

1606) Altogether, the wages of common labour rose by 180 percent while craftsmen's wages rose by 157 percent.<sup>15</sup> The cost of living index (more about this later) rose by 98 percent in the interval 1565/1569 to 1605/1609.

Frequent wage increases, sufficient to more than outstrip the rise in prices, were not unique to the drainage works at Spaarndam. They were general to the entire economy, as is shown by Table 2, which summarizes in unweighted indexes wage data drawn from ten separate locations in the western Netherlands (Holland, Zeeland, Utrecht), and from seven locations in the eastern Netherlands (all other provinces). The real wage recovery of this period is revealed in figures 1 and 2.

The demand for labour rose more rapidly in the period 1570-1620 than did its supply – despite the massive immigration from the Southern Netherlands, despite the rapid natural increase and urbanization of the domestic population, and despite the radical rationalization of the work year introduced after 1574.

Until the Revolt, the maximum length of the work year was limited by the Church calendar to 261-264 days. Records from Antwerp, Bergen-op-Zoom, Utrecht, and Zutphen all confirm that some 50 saints days supplemented the 52 Sundays as days free of ordinary labour. This situation reflected the achievements of workers in the labour-scarce fifteenth century, and even before the Revolt efforts to prune this luxuriant growth of leisure had brought a measure of reform. Still, the decisive step came when the Synod of Dordrecht in 1574 pronounced that workers should henceforth take satisfaction with Sundays as the day of rest, and no other days.<sup>16</sup> The pronouncements of clergymen in solemn conclave certainly did not alter immediately the practice of thousands of workers and their employers. At any event, a handful of religious holidays (the same ones that are now observed in the Netherlands) escaped the sentence of the Synod. But, in time, a work year of 307 days became practice as well as theory; the maximum work year had grown by 18 percent.

The argument that the rising wages in the decades after 1570 is the result of a vigorous growth in the demand for labour is bolstered by the behaviour of relative wages. The wages of unskilled labour – least able to create artificial scarcity of supply – rose more rapidly than did craftsmen's wages, causing the skill premium to decline from some 80 percent in the period 1550-1574 to 40 percent, and often less, in the decades after 1630. The relative rise of unskilled wages testifies to a rapid economic expansion pressing upon the supply of labor.

The role of productivity-increasing investment in this economy is illustrated by a second example of relative wage changes. Sawyers [*houtzagers*] held a strategic place in the 'capital goods' sector of the pre-industrial economy because urban expansion, farm improvements, and shipbuilding all required sawn lumber. The demand for sawyers' labour sensitively reflected the level of investment. As beneficiaries of the 'investment accelerator' (i.e., the demand for capital goods rises more rapidly than the growth of the economy, and vice versa when the economy ceases to grow) sawyers saw their wages rise from some 90 percent of

master craftsmen in the first half of the sixteenth century to a peak of 130 percent by 1610. The invention of windmill-driven mechanical lumber sawing in 1596 was a logical reaction to this growing bottleneck to economic expansion. It took time to perfect the sawing mill, and to overcome the municipal guild obstacles to its use, but as the sawing mill was diffused through Holland after 1610, the relative wages of hand sawyers declined, until by 1665 the references to sawyers all but disappear. The sawyers had become early victims of technological unemployment.

#### *4. Labour in the Golden Age*

The explosive growth in both the demand for and the supply of labour was followed by a short, but serious setback in the 1620s, as the Republic renewed its war with Spain and as much of Europe suffered the trade and monetary contraction known collectively as the 'crisis of the 17th century'.<sup>17</sup> The price rises of this decade were almost entirely uncompensated by wage adjustments. After 1630, these setbacks were more than made good by another, more gradual, round of nominal wage increases. In retrospect, we can see that the wage increases granted in the 1640s-1660s would be the last of any size and scope until well into the nineteenth century; they brought about no further deterioration of the skill premium, however, for skilled craftsmen's wages rose by 37 percent in the period 1610/1614 – 1665-1669 while in the same interval wages for the unskilled rose by 31 percent.

The hectic development of the Republic's economy in the century after the Revolt had a substantial regional impact: Political, military, and economic forces conspired to drain the economic life from many border, inland, and river communities at the same time that the maritime regions flourished. Despite this, the wage-gap between the maritime and inland zones did not change substantially. In the 1670s the differentials between these zones were much as they had been 120 years previously: inland craftsmen earned some 70 percent of the wage paid to their colleagues in the west; unskilled labor fared a bit worse, earning about two-thirds of the western wage. Over many centuries, this east-west differential fluctuated within a narrow range.

Another curious feature of Dutch labour markets in our period is that rural wages were not lower than urban wages; nor were small town wages lower than those in the biggest cities. The available evidence does not allow us to conclude that there was any systematic difference at all, although it is striking that the very highest wages are often found in small places, like Spaarndam and Woerden in the early sixteenth century and rural North Holland in the third quarter of the seventeenth.

The rough equality of wages for the same grade of labour in urban and rural locations in the west suggests that labour markets were well-integrated, both

among cities and between countryside and city. The high productivity of labour in agriculture may play a role in this, by seeing to it that the opportunity costs of labour in the rural economy were no lower than in the city.

These nominal wage differentials, or their absence, raise a puzzling issue when their consequences for the real wage are considered. The cost of living index used here, and the food prices used in other studies, are based on urban evidence. The higher excise taxes of the cities (they levied municipal as well as provincial taxes), the higher house rentals, and the reduced scope for auto-consumption in the city are all compelling arguments in favor of higher living costs in the cities. Moreover, those costs were substantially higher in Holland, with its high excise taxes and large cities, than in the inland provinces. Could it be that the standard of living was higher in rural areas and small cities than in the large cities; and higher, or as high, in the sleepy inland provinces as in Holland?<sup>18</sup> And if this was so, how could one explain the large-scale migration of labour from regions of high real wages to Holland and its cities, where high living costs forced down the real wage?

The resolution of this paradox will be assisted by improved cost of living data (we know very little about such costs outside the cities of Holland), but a full resolution requires that we confront the issue of *actual earnings* vs. *daily wages*. When a calculation of the amount of rye bread that a day's wage can buy shows that the worker in Overijssel was better off than the worker in Holland, but other evidence shows that most Hollanders ate the much more expensive wheat bread while in Overijssel the cheaper rye bread predominated, it should be apparent that the purchasing power calculation has missed an important factor, the income earning potential of the two regions.

It is understandable that this issue has been avoided; few sources stand ready to shed light on the annual earnings of households rather than the daily wages of (adult male) workers. In what respects might Holland and its cities have offered better prospects for high household earnings than rural and, especially, inland locations? To begin with, we can point to the more regular employment that awaited the worker in a region of high investment. The large casual labour market benefitted especially from the ongoing investment in urban expansion, residential construction, land reclamation, improved drainage, and canal and other infrastructural improvements that characterized the first 60 years of the seventeenth century.

When the cities of Haarlem and Leiden decided to dig a new canal, a *trekvaart*, between their two cities they parcelled the work out to nearly a hundred contractors who worked simultaneously, each in his own segment of the 29 kilometre canal. The work was completed in a single summer season, and involved the simultaneous labour of some 1500 workers.<sup>19</sup> These men, who assembled along the length of the canal, and just as quickly dispersed, carried on in the tradition we noted earlier when hundreds of labourers were needed at the dikes near Spaarndam in 1510. The investment booms of the Golden Age kept this flexible labour force employed, on the 27,000 hectares of newly drained lakes between 1600 and 1650

[the *droogmakerijen*], the over 80,000 ha. of reclaimed coastal land between 1590 and 1665 [the *bedijkingen*], the 658 km. of new *trekvaart* dug or improved in 1632-1665, the 45 harbour extensions build in 16 separate ports between 1570 and 1670, and, of course, the continual urban expansion during that same hundred-year period.<sup>20</sup>

The days of this large casual labour market were numbered. The demand would vanish once the demographic and economic expansion, and rising prices, ceased; the supply of casual labour was apparently shrinking as the small farms and supplementary employments needed to make such seasonal work possible began to disappear. They disappeared, ironically, because of the very investment processes that had offered employment to so many casual labourers.

Via the large-scale use of casual labour, the Golden Age economy developed capital-intensive agricultural and industrial sectors that offered, by the standards of the time, steady employment to thousands in shipbuilding, refining, brewing, distilling and other fuel-intensive industries, industrial windmill-based food processing, oil-pressing, and papermaking, and in employment on commercial farms.

In addition, the urbanization that proceeded on the strength of the commercial sector gave rise to a large number of crafts and specialist services that offered regular employment to thousands, as demand was held up by the high incomes of the commercial elites and supply was controlled by municipally regulated guilds.

By the mid-seventeenth century, the Republic's economic expansion had succeeded in creating a large number of well-paying, reasonably secure jobs. These fruits of a century of economic expansion shifted the composition of employment away from unskilled, casual labour and toward more regular employment in sectors featuring substantial investment in human and physical capital. So long as the economic opportunities justified a continuation of the investment process, the labour markets of the maritime zone must have been very attractive: the number of secure jobs rose while the casual labour market benefitted from an ongoing demand for casual labour.

Although little is known with certainty about the potential earnings of other than adult male workers, it is likely that the cities offered substantial earnings opportunities to married women, especially in the expanding sphere of retail trade. The prolonged absences of men employed in shipping must have stimulated independent economic activity among women; foreign visitors, at any rate, did not fail to remark at the (unseemly) independence of Dutch women, and no one thought it inappropriate to reserve certain forms of heavy labour, such as *turfvulster* (filling bags with peat) and *verschietster* (turning grain stored in warehouses to prevent spoilage) to poor and widowed women.

For single women the chief employment opportunities, as everywhere in Europe, were in household service. The demand for such labour was probably no different in the cities of the Republic than in other countries, but in those rural areas specialized in dairy production the demand for female servants was particularly

strong, causing their salaries to stand at less of a discount to male salaries than elsewhere. It remains to be seen how this rural demand may have affected the status of single women in the urban labor market.<sup>21</sup>

The new structure of the Republic's labour market – featuring a 'core' of permanent, capital intensive and/or high skill jobs and a large, fluid casual labour market – became difficult, indeed, impossible to sustain in the century after the 1670s. As noted earlier, the sharp decline in infrastructural and capital goods investment de-stabilized the casual labour market while the declining price level that then set in confronted a cost structure in the urban and commercial agricultural economies that proved to be unbudging. In time, the growing unprofitability of these sectors undermined employment levels, and even a long process of demographic contraction could not restore the balance between supply and demand in the labour market. The high wage levels reached in the century after the Revolt came to form an obstacle to economic revival at the same time that they appeared to be a requirement for survival in a high cost urbanized society.<sup>22</sup>

These problems notwithstanding, the wage levels remained at the high levels achieved by the mid-seventeenth century long thereafter. Wage rates changed but rarely until well into the nineteenth century, forming a remarkably long era of wage rigidity that has attracted the attention of economic historians, who have seen in the 'inherited' high wage structure an important obstacle to the later industrialization of the Dutch economy.<sup>23</sup>

But we should not assume too quickly that the stability of wages reflects an ossification in the economy, or a labour market so petrified as to cease being a market at all. On the contrary, there is abundant evidence of ongoing adjustments – individually always minor adjustments – to the terms of employment after the mid-seventeenth century. The length of the winter wage season (when wages were reduced by 15 to 25 percent below the summer wage rates cited in the tables above) was periodically adjusted, sometimes to the workers benefit, sometimes not. After 1650, usually not. The provision of beer, which was customary in many crafts, came to be converted into the payment of 'beer money' – an effective increase in the money wage – as beer became a less customary drink. New workers were not necessarily paid the prevailing wage if their skills or effort did not warrant it, or if temporary demand required exceptional payments. Many documents record a substantial range of wage rates stretching below the 'norm', and sometimes extra payments, usually disguised as bonuses, hardship payments, compensation for the use of tools, etc.. For instance, when the Nijmegen public works director, Peter Bruyns, hired a new man, Jan, on 22 July 1662, he recorded in the margin of his wage book, 'De daghhuer van Jan is niet hier inbegrepen, oorsake om dat men eerst eens sien wil wat hij verdienden kan'. In 1666 labour was in short supply, and Peter Bruyns hired, against his own better judgement, a certain Gybert Coenen, 'maar, voor mindre daghheer also hij geen [normale] daghhuer kan verdienden'. In the margins of another wage notation he wrote 'N.B. dezen is een

onnuttig gesel'<sup>24</sup>. Jan Jacobs, the useless journeyman, was soon released. But at the same time, also in 1666, Bruyns noted about two others, '[Ik] heb haer beyde niet kunnen houden inden arbeyt alsoo anderen meerder loon wilden geven en [omdat ze] zeer bequaam zynde heb haar elck 2 st. moeten geloven [beloven].'<sup>25</sup>

If Peter Bruyns is at all typical of those in charge of supervising labour in the Dutch Republic, nothing proceeded by sheer routine. The long stability of wages was not so much a product of inattention and neglect as it was the net result of ongoing adjustment – and resistance to adjustments.

From its earliest days the Republic's labour market extended beyond the territorial boundaries of the Republic. Apart from the short-term refugee migration from the Southern Netherlands in the years after 1585, there came into being ongoing labour migration flows from all the neighbouring territories. Textile workers continued to be drawn from Flanders, and later from Liège, throughout the seventeenth century; Amsterdam's bakers were mainly Germans, as were a large number of bricklayers and stonemasons. Many other construction workers migrated from Brabant. The supply of tailors and shoemakers was regularly replenished by migrants from Gelderland, Overijssel, and the neighbouring German territories. The seafaring and shipbuilding sectors drew their labour needs from the Dutch maritime provinces and from a coastal zone extending through Northern Germany to Denmark and Norway.<sup>26</sup>

A special problem of labour recruitment, already in the early seventeenth century, was formed by the large, but variable, demand for soldiers and sailors to serve in both the Dutch military and the Dutch East India Company [*Verenigde Oostindische Compagnie*, or VOC]. Already in 1645 well over half the soldiers of the Dutch army [*het Staatse leger*] consisted of foreign regiments while over half of the personnel recruited for service in the VOC had been born beyond the borders of the Republic.<sup>27</sup> These labour recruitment efforts especially filled the Dutch cities with poor, resourceless migrants that pressed on the resources of the charitable institutions and challenged the bodies charged with maintaining peace and order in the cities.

Throughout the first half of the seventeenth century the cities acted with vigour to suppress public begging; they arrested beggars by the hundreds, and established *tucht- en spinhuizen*, *verbeterhuizen* and the like to incarcerate the overwhelmingly immigrant beggars, thieves, and prostitutes.<sup>28</sup> The suppression of these vices could be intense in part because the cities also sought to accommodate the lowest stratum of the labour market with a policy of accessible poor relief. In the first decades of the seventeenth century the deacons boards of the Reformed church [*diakonie*] placed few qualifications on supplicants with respect to religious affiliation, regularity of church attendance, or duration of residence in the community. Just as the society stood open to immigrants, the dominant Reformed church assumed an inclusive 'public church' posture.

Poor relief was first of all a religious duty, but the cities always sought to regulate this important function, and most of them established supplementary public poor relief agencies, such as Amsterdam's *Almoezeniers* in 1613 or Utrecht's *Almoezenierskamer* in 1628. As the churches became more restrictive in their support of the poor – placing more requirements with respect to membership in a specific religious community – the role of the public poor relief agencies grew. While the churches catered to a more settled population, the poor, resourceless migrants became the special responsibility of the public agencies.<sup>29</sup> So long as the demand for the labour of such migrants was strong, public policy was accommodating. As the demand receded, in the 1670s, so did the posture of public policy become more restrictive; by 1682 most cities sought to restrict immigration to persons possessing written guarantees (*acten van indemniteit*) that their home towns would provide for them should they become a public charge. Not all cities insisted on this guarantee. The most conspicuous exception was Amsterdam, the center of VOC recruiting, with a continuing demand for casual labour, which remained an 'open' city.

### 5. Conclusion

By the third quarter of the seventeenth century the fluid labour market that had characterized the preceding era of rapid economic growth was assuming the shape it would have for the next century and more. The new labour market was characterized by 'segmentation', where the employees of the relatively secure 'core' jobs enjoyed the protection of public or semi-public employers, guild regulation, or the continuity promised by the capital- or skill-intensity of their work. Besides this fruit of a century of economic growth, there was the casual labour market (to which one can add the labour-intensive industrial employments, especially in the textile trades) which was declining in importance, but also in viability by the very process of capital investment and commercialization that raised up the 'core' employment sector. Finally the labour market possessed a lowest segment of the unskilled, uprooted, indebted, – where military employment and, increasingly, service in the VOC always beckoned. The VOC, indeed, came to fill the function of 'employer of last resort' in the port cities of the Republic.

This three-sector labour market acted to protect and sustain the high-wage economy achieved by the mid-seventeenth century. The achievement was real. The purchasing power of labour stood at a higher level in the Republic than elsewhere in Europe, and it did so not because of fleeting market conditions, but as a result of productivity-raising investment and organizational change. But, even a well-grounded prosperity is not invulnerable. As the profitability of the economy declined after 1670 the level of investment fell. It fell most sharply in the most labour-intensive sectors, exposing growing numbers of wage labourers to unem-

ployment, and the resulting labour market disequilibrium gave rise to reactive measures that solidified the three-sector segmentation described above.<sup>30</sup>

One can conclude this examination of the labour market during the economic growth of the era 1500-1670 by observing that the high wage economy was not a *product* of the later economic stagnation, with its high taxes and restrictive practices. It was a product of the era of economic growth, achieved by productivity-raising investments in agriculture, industry, and commerce. In this expansion era costs rose, to be sure, but wages rose more rapidly than prices, and real annual household earnings probably rose even more than did real wages. The growth process did not so much 'sow the seeds of its own destruction' as it established material standards and economic interests whose defense in the new post-1670 economic environment gave rise to practices that prevented the reachievement of competitive cost structures in many sectors of the economy. Merchant capitalism had its limitations, to be sure, but it was not intrinsically self-destructive. Employers and labourers alike had choices to make – then as now.

Table 1 a. *Wages of skilled construction labour, in stuivers*

	1460-1480	1510-1525	1550-1554
Spaarndam		6	10
Haarlem	5	5-6	9
Woerden	5	7	8
Leiden	5	5-6	
Amsterdam			7
Den Haag			7
Dordrecht			7
Utrecht	3	4	6
Den Bosch		5	5
Bergen op Z	4	5	5.5-6
Antwerpen	4	5	9
Mechelen	4	4	
Brussel		5	6
Lier	3.2	4	
Zutphen	2.4	2.7-3	5
Nijmegen			5
Venlo			5.2
Kampen			5

Sources: Hoogheemraadschap van Rijnland, Oud Archief, nr. 9513-9577; Noordegraaf, *Hollands welvaren?*; W. Koppers & R. van Schaik, 'Levensstandaard en stedelijke economie te Zutphen in de 15de en 16de eeuw', *Bijdragen en Mededelingen "Gelre"* 72 (1981) 1-45; H. Scholtes, *Werken om den Brode; Peiling naar de levensstandaard van timmerlieden, metselaars en ongeschoolden te Bergen op Zoom* (Nijmegen 1983; unpublished *doctoraalscriptie*); Ch. Verlinden *et al.* (eds.), *Dokumenten voor de geschiedenis van prijzen en lonen in Vlaanderen en Brabant, XVe - XVIIIe eeuw* (Brugge 1959); B. Blondé, *De sociale structuren en economische dynamiek van 's-Hertogenbosch, 1500-1550* (Tilburg 1987; *Bijdragen tot de geschiedenis van het zuiden van Nederland*) 211-16.

Table 1 b. *Wages of unskilled labourers, 1460-1554, in stuivers*

	1460-1480	1510-1525	1550-1554
Spaarndam		4	4
Haarlem	3	3	3-4
Woerden	3	4	4
Leiden	3	2.5	3
Amsterdam			5
Den Haag			3.5-4
Dordrecht			4-5
Utrecht	2	2.5-3	3
Den Bosch		3	3
Bergen op Z	2	2.5	3-4
Antwerpen	1.67	2.75	4
Mechelen	2	3	3
Brussel		3	3.5
Lier	2	2.5	3.5
Zutphen	1.8	1.8-2	2.7-3
Arnhem			3
Nijmegen			2.5
Brugge			3-4
Gent			3

Sources: see table 1a

*Sources for tables 2a and 2b*

*Table 2a*

Alkmaar: L. Noordegraaf, *Daglonen in Alkmaar 1500-1850* (Amsterdam 1980).

Medemblik: G.A. Medemblik, *Oud Archief, Bijdragen tot de Thesauriersrekening, 1591-1813*, no. 150.

Amsterdam: G.A. Amsterdam, *Fabrieksambt*, no. 2; Part. Arch. 367, *Burgerweeshuis archief*, no. 446-48; H.P.H. Nusteling, *Arbeid en werkgelegenheid in Amsterdam* (Amsterdam 1985) 252.

Spaarndam en Halfweg: Hoogheemraadschap van Rijnland, *Oud Archief, Bijlagen tot de rekeningen*, no. 9530 - 10086.

Leiden: Hoogheemraadschap van Rijnland, as above; G.A. Leiden, Oud Archief, Trekvaarten en jaagpaden, no. 60, bijlagen tot de rekeningen.

Utrecht: R.A. Utrecht, Kapittel ten Dom, no. 704; G.A. Utrecht, Acquitten kameraar rekening, no. 1260.

Goes: G.A. Goes, Rekeningen van de stad, no. 783-959; rekeningen stadsfabriek, no. 1813-14, 1793-97.

Den Haag: G.A. Den Haag, Oud Archief, no. 5198, rekeningen van Delftse straatweg, L. Noordegraaf & J.T. Schoenmakers, *Daglonen in Holland 1450-1600* (Amsterdam 1984).

Dordrecht, Noordegraaf en Schoenmakers, as above.

Noordholland platteland: Hoogheemraadschap van de Uitwaterende Sluizen, Rekeningen van de Rentmeester, no. 74.

#### *Table 2b*

Franeker: G.A. Franeker, no. 725-831, kwitanties en bijlagen tot de rekeningen.

Groningen: G.A. Groningen, Oud Archief, No. 332b, Bijlagen tot de stadsrekeningen.

Kampen: G.A. Kampen, Oud Archief, no. 1977-1989, 685; D. van der Vlis, 'Daglonen in en rond Kampen van 1526 tot 1810', *Overijsselse Historische Bijdragen* 96 (1981) 77-97.

Zutphen: G.A. Zutphen, no. 2010-14; Rekeningen, bijlagen tot rekeningen van timmermeester.

Arnhem: G.A. Arnhem, Secretarie rekeningen en bijlagen, no. 1636-92; Rentmeester rekeningen en bijlagen, no. 1305-1548; Fortificatiën, no. 3388-3446.

Nijmegen: G.A. Nijmegen, Oud Archief, no. 2892-93, 1953-66, 3089; T.L.M. Engelen, 'Nijmegen in de 17de eeuw', *Nijmeegse studiën* 7 (1978); P.H.M.G. Offermans, *Arbeid en levensstandaard in Nijmegen omstreeks de Reductie (1550-1600)* (Zutphen 1972) 147-53.

Den Bosch: G.A. Den Bosch, stadsrekening, no. 10-361, bijlagen to stadsrekeningen, no. 1-180; Godshuizen Archief, no. 581-593, 643-655.

Table 2a: *Wages in west Netherlands (Holland, Utrecht, Zeeland), 1500-1680 (Stuivers per day, summer wages)*

year	Masters	Journeyman	Unskilled	Hod Carriers	Sawyers
1500	5.10	4.25	3.50	2.92	4.83
1510	5.50	4.63	4.00	2.92	4.83
1520	5.34	4.50	3.17	3.15	5.25
1530	6.05	4.58	3.50	3.25	5.67
1540	6.39	5.30	4.00	3.50	7.00
1550	7.18	6.21	3.98	3.79	6.33
1555	7.98	6.30	4.15	3.70	6.83
1560	7.93	6.65	5.04	4.08	8.75
1565	9.77	7.69	4.96	5.17	10.90
1570	10.30	7.97	5.63	5.17	10.80
1575	9.57	8.00	5.75	6.43	11.40
1580	13.27	12.10	8.00	7.83	13.75
1585	13.95	12.12	8.80	9.20	15.75
1590	17.00	14.50	9.70	9.50	21.88
1595	18.59	16.70	11.75	11.38	20.63
1600	18.77	17.20	12.83	11.55	21.67
1605	20.25	17.67	12.83	11.55	24.50
1610	20.09	18.03	14.83	13.00	27.00
1615	21.53	18.75	14.38	13.50	26.50
1620	21.08	20.00	14.50	13.50	26.33
1625	21.60	19.88	14.29	13.40	26.67
1630	23.21	20.65	16.20	13.40	26.33
1635	25.29	22.10	19.10	15.16	26.33
1640	24.04	21.48	19.58	16.00	26.67
1645	25.40	22.75	17.40	16.71	28.00
1650	25.55	23.50	19.70	16.07	28.67
1655	25.87	23.47	17.50	16.43	28.00
1660	27.00	24.58	18.90	16.75	30.33
1665	27.57	24.83	19.40	17.00	31.50
1670	27.29	24.58	18.80	17.50	
1675	27.21	24.89	19.07	17.79	
1680	27.41	24.53	19.17	17.79	

Table 2b: *Wages in east Netherlands (all provinces except Holland, Utrecht, Zeeland), 1500-1680.(Stuivers per day, summer wages)*

year	Masters	Journeyman	Unskilled	Hod Carriers
1500	3.20		1.60	1.75
1510	3.50		2.00	2.00
1520	4.10		2.20	2.60
1530	4.20		2.40	3.00
1540	4.30		2.40	3.00
1550	5.25	5.00	2.63	3.00
1555	5.17	5.04	2.63	3.00
1560	5.50	5.29	3.67	3.33
1565	5.67	6.00	3.67	3.83
1570	5.67	6.22	3.67	3.83
1575	6.00	6.09	4.33	4.33
1580	7.09	7.96	5.25	6.00
1585	9.78	10.04	6.00	6.17
1590	10.46	10.75	6.33	7.33
1595	11.98	12.11	8.00	8.17
1600	12.40	12.08	8.00	8.33
1605	13.37	12.19	8.00	
1610	13.79	12.26	8.25	
1615	14.33	12.67	9.35	
1620	14.76	13.09	9.40	
1625	16.04	14.40	10.13	
1630	16.70	16.73	11.00	12.00
1635	18.80	17.54	11.25	13.00
1640	18.63	17.18	11.70	13.00
1645	18.84	17.57	11.67	13.00
1650	18.33	18.30	12.00	13.00
1655	19.40	17.97	13.00	14.40
1660	21.09	18.20	12.50	14.67
1665	20.80	18.20	12.20	14.00
1670	20.75	18.20	13.20	14.67
1675	20.67	18.30	13.25	14.70
1680	20.50	17.55	13.13	14.00

FIGURE 1: Master carpenters and masons,

West Netherlands: real wage index

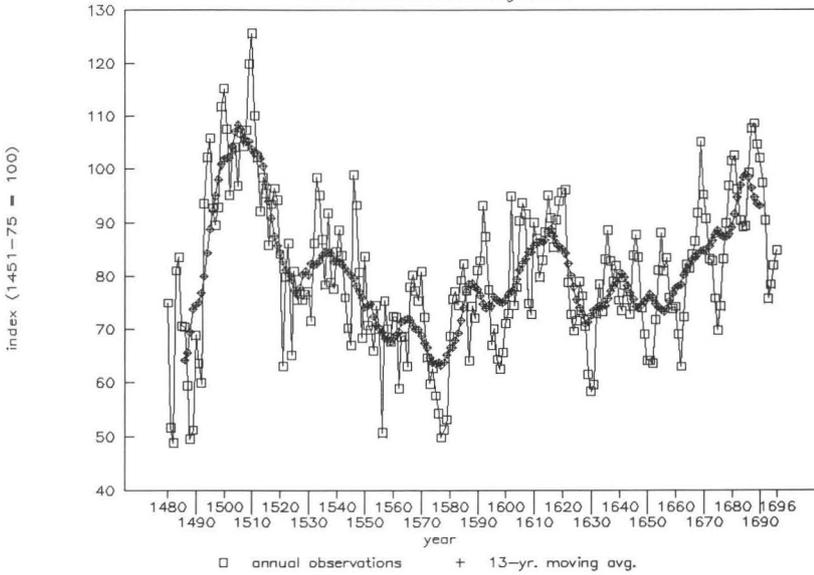
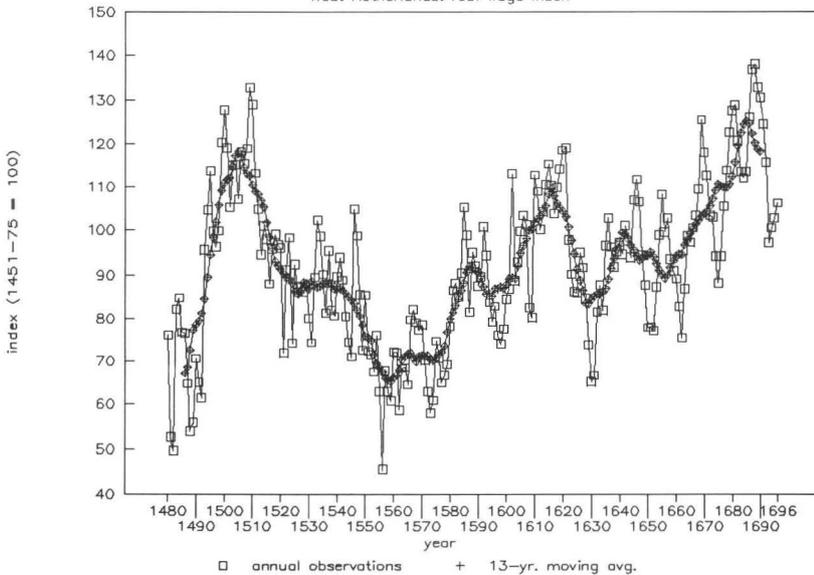


FIGURE 2: Hod carriers,

West Netherlands: real wage index



## NOTES

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- 4 See L. Noordegraaf, *Hollands welvaren?; Levensstandaard in Holland 1450-1650* (Bergen 1985) for a review of evidence.
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- 7 J.A. van Houtte, *An economic history of the Low Countries 800-1800* (London 1977) 232.
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- 9 D.E.H. de Boer, *Graaf en grafiek; Sociale en economische ontwikkelingen in het middeleeuwse 'Noordholland' tussen 1345 en 1415* (Leiden 1978); H.P.H. Jansen, *Hollands voorsprong* (Leiden 1976; inaugural lecture), translated as 'Holland's advance', *Acta historiae neerlandicae* 10 (1978) 1-19. See also C.M. Lesger, *Hoorn als stedelijk knooppunt; Stedensystemen tijdens de late middeleeuwen en vroegmoderne tijd* (Hilversum 1990; *Hollandse Studiën* 26) 19-26.
- 10 Van Zanden, *Arbeid*, ch. II.
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- 16 Noordegraaf, *Hollands welvaren?*, 58-60.
- 17 See: J. de Vries, *The economy of Europe in an age of crisis 1600-1750* (Cambridge 1976) 16-29; G. Parker & L. Smith, 'Introduction', G. Parker & L. Smith, *The general crisis of the seventeenth century* (London 1978) 6-14; R. Romano, 'Between the sixteenth and seventeenth centuries; The economic crisis of 1619-22', Parker & Smith, *The general crisis*, 165-225.

- 18 An argument in support of the view that real wages were as high in Overijssel as in Holland is found in: J.L. van Zanden, 'Lonen en de kosten van levensonderhoud, 1600-1850', *Tijdschrift voor Sociale Geschiedenis* 11 (1985) 309-324; reprinted in Van Zanden, *Arbeid*, ch. VII.
- 19 J. de Vries, *Barges and capitalism; Passenger transportation in the Dutch economy (1632-1839)* (AAG Bijdragen 21 (1978)/Utrecht 1981) 98.
- 20 On land reclamation see, Woude, A.M. van der, *Het Noorderkwartier; Een regionaal historisch onderzoek in de demografische en economische geschiedenis van westelijk Nederland van de late middeleeuwen tot het begin van de negentiende eeuw* (AAG Bijdragen 16 (1972)/Utrecht 1972) 46-53; on *trekvaart* construction, De Vries, *Barges and Capitalism*, 97-102; on harbour construction, J.P. Sigmond, *Nederlandse zeehavens tussen 1500 en 1800* (Amsterdam 1989) 59-60, 103-104, 156.
- 21 Comprehensive salary data for servants is first available only in 1800, in the Goldberg enquete, (ARA Den Haag, Collectie Goldberg, nr. 34, 'Staat van den Landbouw in 1801'). The observations made here are based on more fragmentary data that suggest that the patterns observed in 1800 were not new, but reflected long-standing characteristics of female salaries in regions specialized in dairy production.
- 22 For a full account of labour market evolution after 1650 see: J. de Vries, 'How did pre-industrial labor markets function?', G. Grantham & M. MacKinnon (eds), *The evolution of labour markets* (Montreal, McGill University Press, forthcoming).
- 23 The literature on this subject is vast. Major works include: I.J. Brugmans, *De arbeidende klasse in Nederland in de 19e eeuw, 1813-1870* (Amsterdam 1925) ch. II; J. Mokyr, *Industrialization in the Low Countries, 1795-1850* (New Haven 1976) ch. V; R.T. Griffiths, 'The role of taxation in wage formation in the Dutch economy in the first half of the nineteenth century', *Ondernemende geschiedenis; 22 opstellen geschreven bij het afscheid van Mr. H. van Riel als voorzitter van de vereniging Het Nederlandsch Economisch-Historisch Archief* ('s-Gravenhage 1977) 260-271; J.M.M. de Meere, 'Daglonen in Belgie en Nederland in 1819; Een aanvulling', *Tijdschrift voor Sociale Geschiedenis* 6 (1980) 357-384; R.W.J.M. Bos, 'Loon en arbeidsmarkt in Nederland, 1800-1850; Een overzicht en uitblik', *Bijdragen en Mededelingen betreffende de Geschiedenis der Nederlanden* 96 (1981) 516-524; Ph. Kint & R.C.W. van der Voort, 'Economische groei en stagnatie in de Nederlanden 1800-1850', *Economisch- en sociaal-historisch jaarboek* 43 (1980) 105-153.
- 24 'The daily wage of Jan is not included here, because one first wants to see what he can earn', 'but, for a lower daily wage because he can not earn a normal daily wage', 'N.B. this is a useless journeyman'.
- 25 Gemeente-archief Nijmegen [= GA Nijmegen; Municipal Archive of Nijmegen], Oud Archief, nr. 1963; 'I have not been able to keep these two at work as others were prepared to pay more to them and because they were very capable I have had to promise them 2 st.'
- 26 A. Knotter & J.L. van Zanden, 'Immigratie en arbeidsmarkt in Amsterdam in de 17de eeuw', *Tijdschrift voor Sociale Geschiedenis* 13 (1987) 403-431; S. Hart, *Geschrift en getal; Een keuze uit de demografisch-, economisch- en sociaal-historische studiën op grond van Amsterdamse en Zaanse archivalia* (Dordrecht 1979).
- 27 For military recruiting see: H.L. Zwitser, *De militie van den staat; Het leger van de Republiek der Verenigde Nederlanden* (Amsterdam 1991) 44-45; for recruitment by

- the Admiralties and the VOC, J. Lucassen & J.R. Bruijn, *Op de schepen der Oost-Indische Compagnie* (Groningen 1980) 11-29.
- 28 W.F.H. Oldewelt, 'Het aantal bedelaars, vondelingen en gevangenen te Amsterdam in tijden van welvaart en crisis', *Amstelodamum* 39 (1942) 21-34.
- 29 H.P.H. Nusteling, *Welvaart en werkgelegenheid in Amsterdam 1540-1860; Een relaas over demografie, economie en sociale politiek van een wereldstad* (Amsterdam 1985) 161-66.
- 30 I try to explain the labour market disequilibrating impact of segmentation in De Vries, 'How did pre-industrial labor markets function?', [forthcoming].

# V

## TECHNOLOGICAL CHANGE AND THE ECONOMIC EXPANSION OF THE DUTCH REPUBLIC, 1580-1680\*

by

*Karel Davids*

### *1. Introduction*

Expert observers in the past and eminent historians today are agreed that the Dutch Republic displayed a remarkable level of technological skill. 'The people of the United Provinces', Cardinal Guido Bentivoglio declared in 1611, 'are very proficient in all the arts, but especially the manual and mechanical ones'<sup>1</sup>. Samuel Buschenfelt, who in the early 1690s by order of the Board of Mines in Stockholm made a long voyage in western Europe to get acquainted with every piece of technology that could possibly be of use to the Swedish state, thought Holland could rightly be called an 'officina machinarum'<sup>2</sup>. Thomas Nugent stated in his *Grand Tour*, published in 1749, that 'there [was] no nation where the people apply themselves with more diligence to all manner of mechanic arts, than the inhabitants of the United Provinces'<sup>3</sup>. Abbé Rozier, member of the Académie Royale des Sciences, was equally impressed by the achievements of the Dutch. 'Le besoin et l'amour du gain ont porté d'un tel degré de perfection toutes les machines', he reported in 1777 after visiting Holland in the company of his fellow-Académicien Desmarest, 'qu'on est en droit de dire que les roues de nos montres ne marchent pas avec plus d'exactitude'<sup>4</sup>.

Among economic historians, the late Charles Wilson was the first to recall attention to 'technological prowess' as a key factor in the growing prosperity of the Dutch Republic<sup>5</sup>. Jan de Vries remarked that the Republic 'owed much of its rise as an industrial power to a series of technological advances'<sup>6</sup>. And Jonathan Israel, too, has stated that the pre-eminence of the Dutch in industrial production in the seventeenth century was essentially based on its technological superiority<sup>7</sup>.

The evolution of technology in the Dutch Republic has given rise in the past century to a substantial body of scholarship. While the topic is nowadays no longer as widely studied by economic historians as it used to be up to the 1950s, it still constitutes a lively field of research for specialists from various other streams of historical inquiry<sup>8</sup>.

Taking this long and varied tradition of scholarship as a starting point, this essay will first attempt to assess the contribution of technological innovations to the economic expansion of the Northern Netherlands between around 1580 and the end of the seventeenth century. What did the expansion owe to technological advances? Discussion of this issue leads us naturally to consider more closely the actual pattern of technological change that occurred in the Dutch Republic. These matters are the subject of the first two sections of this article. In the third and final section, the essay will explore how best to explain why certain technological innovations emerged and were selected, and not others.

## *2. Technological change and social savings*

Modern economic scholarship shows that it is extremely hard to pin down the role of technological change in economic growth. Even if economists are generally agreed that growth of production cannot fully be explained by enhanced inputs of capital and/or labour alone, it is by no means easy to determine to what extent the residual may be ascribed to advances in technology. Statements about the contribution of technological innovations remain at best approximations, and this is all the more true for the early modern period, for which data are often defective or even completely lacking. Any attempt to quantify the role of technological change in the expansion of the Dutch Republic is thus bound to produce only very crude results.

Keeping these limitations in mind, the task at hand may be tackled from two sides: either one takes a given innovation as starting point and then attempts to assess its overall impact on the economy, or one starts from known sectors of growth and then tries to identify changes in technology that preceded or accompanied the growth in these particular sectors.

The first approach was employed some years ago in studies on changes in energy use and inland navigation in the Netherlands between the sixteenth and nineteenth centuries. The guiding concept in these cases, borrowed from earlier research on nineteenth-century economic history in Britain and America, was 'social savings'. According to this approach, the importance of an innovation in a given sector may be assessed by estimating the amounts of resources that would have had to be reallocated to that sector if the innovation had in fact not been put into practice or, in other words, the amounts that had been saved by its application.

The most far-reaching claims on the basis of such calculations are those made by J.W. de Zeeuw in a ground-breaking study on the availability of energy<sup>9</sup>. De Zeeuw argued that the prosperity of the Dutch Republic in the Golden Age was to a large extent due to the immense savings in land and labour made possible by the easy accessibility of peat. Peat deposits were not unique to the United Provinces. But the stark fact was that the efforts required to exploit them were much smaller than anywhere else. Peat deposits in the Netherlands could easily be reached by digging navigation canals into peat areas and linking these up with existing networks of natural waterways. Thanks to the highly developed system of inland navigation, all major cities in the country were assured a regular supply of cheap fuel. The annual consumption of peat in the seventeenth century, according to De Zeeuw's calculations, amounted to over 6,000 thousand million kcal, or around 4 million kcal per capita<sup>10</sup>. The amount of energy derived from other sources pales in comparison. Windmills used in industry provided no more than 45 thousand million kcal per year, and the energy supplied by wind power in inland navigation amounted to a mere 36 thousand million. The contribution from wood and coal was even less<sup>11</sup>.

The easy availability of peat, De Zeeuw asserted, had profound consequences for the development of the Dutch Republic. The abundance of cheap fuel lay at the root of the growth of a whole array of fuel-intensive industries. Owing to the cheap energy supplied by peat, the Northern Netherlands developed into a leading centre of production in such industries as brewing, distilling, brick and tile making, ceramics, bleaching, textile dyeing, salt boiling and sugar refining. The large-scale exploitation and burning of peat, together with the use of wind power in inland navigation and industrial windmills, resulted in immense savings in land and labour. If the Dutch economy in the seventeenth century had had to do without the heating energy derived from peat and the mobile or stationary motion energy provided by wind power, and had instead (like most other countries in Europe) largely relied on the use of firewood, horses and human labour to obtain the same quantity of energy, it would have needed an additional labour input of at least 165,000 man-years per year and an extra acreage of almost three million hectares to feed the horses and supply the timber. The exceptional system of energy production in the Dutch Republic, De Zeeuw concluded, liberated vast resources for other sectors of the economy. The Golden Age was 'born of peat'<sup>12</sup>.

Another advance in inland navigation generated even further social savings, Jan de Vries has argued. The system of passenger transportation by towed barges (*trekschuiten*) along a separate network of canals (*trekvaarten*) developed in the maritime provinces of the Republic between 1632 and 1667 led to a significant decrease in costs compared with the prevailing alternative mode of transportation, the horse-drawn coach. Net benefits to the economy by the reduced input of horsepower were estimated by De Vries at around 0.8% of the gross regional product (GRP) in the period 1665/1675; compared with sailing vessels costs

outweighed benefits by a narrow margin. The GRP was calculated by multiplying an estimated income per capita (borrowed from Gregory King) by the conjectured number of households living in the maritime area served by the *trekvaart* system. In terms of the consumers' surplus (the benefits in money or time as valued by the passengers) the social savings were assessed at around 0.2% of the GRP compared with transportation by sailing vessels and 0.5% if the horse-drawn coach was taken as the most likely alternative<sup>13</sup>. De Vries concluded that the *trekvaart* network was 'no marginal feature' of the Dutch economy. For a preindustrial innovation, its impact could be called 'remarkable'<sup>14</sup>.

What do the estimates presented by De Zeeuw and De Vries tell us about the actual importance of the advances in energy production and inland transportation? De Vries's cautious conclusion about the relative contribution of the *trekschuiten* system hinges, of course – as he was at pains to point out – on the absolute size of the gross regional product. If King's estimate of the per capita income in the Dutch Republic is far off the mark, the reliability of the conclusion decreases accordingly. If income in the Republic in the late seventeenth century was twice as high as King assumed – and this is what De Vries argued in a later paper<sup>15</sup> – then the actual contribution of the *trekschuiten* system to economic growth by 1665/1675 was of course far less than the figures suggest. Even so, De Vries has made a good case for concluding that the introduction of this system must have implied at least *some* social savings vis-à-vis the predominant alternative mode of transportation.

The results obtained by De Zeeuw have been seriously challenged by R.W. Unger<sup>16</sup>. First of all, Unger showed that De Zeeuw overestimated the annual consumption of thermal heat derived from peat by a very wide margin. He arrived at a figure that was only a fifth as large as De Zeeuw's<sup>17</sup>. Second, Unger argued that probably half of the energy embodied in peat was lost to effective work due to the use of inferior ovens, and moreover, that presumably more than 50% of all peat was used for home heating rather than for industrial production. Thus the contribution of peat to the advance of industry (and, by implication, to economic growth) may have been far less than De Zeeuw's figures suggest<sup>18</sup>. Third, De Zeeuw is said to have erred in the other direction by underrating or neglecting the role of other energy sources. Wind power turns out to have been far more important than De Zeeuw allowed, if one takes into account the amount of energy supplied by wind in international shipping – a sector that De Zeeuw completely left out of consideration<sup>19</sup>. The contribution from coal, which De Zeeuw dismissed out of hand, was in reality far from slight. It became ever more significant as time went by, and particularly so in industrial production. Between the middle of the sixteenth century and the end of the eighteenth century in Holland, one branch of industry after another shifted from peat to coal as its principal source of fuel: brewing, distilling, sugar refining, soap boiling, bleaching and copper working. The total energy supplied by coal increased from one-third as much of that derived

from peat by the late seventeenth century to more than twice as much a hundred years later. And in contrast with peat, coal was used almost exclusively in industrial production, and not to heat homes<sup>20</sup>.

One can take the criticism even further on two points. The argument on input of energy sources unfolded by De Zeeuw nowhere allows for the contribution of yet another source of energy: water power. Water-powered mills could in fact be found in many parts of the inland regions of the Dutch Republic and – in the form of tide mills – even in Holland and Zeeland. They provided energy for a wide variety of purposes, including corn grinding, oil pressing, paper making, copper working, bark milling and fulling. The total number of water-powered mills is not known exactly, but it must have run into several hundreds by 1700. The number of paper mills on the Veluwe alone amounted to 170 in the early eighteenth century<sup>21</sup>, and by then there must have been dozens of other mills in operation along the rivers, brooks and creeks of Gelderland, Twenthe, Brabant, Limburg and Utrecht. Some twenty tide mills were still in action at that time in Holland and Zeeland<sup>22</sup>.

The importance of wind power for economic growth in the Netherlands is even more understated in De Zeeuw's estimate than Unger has demonstrated, due to his cursory treatment of the role of wind-driven drainage mills. De Zeeuw left them out of consideration with the argument that they made no net contribution to the national energy supply. His inferences with regard to the role of peat and wind power in inland transportation, however, went much beyond their supposed contribution to the energy supply of the Dutch Republic. He even asserted that savings in land and labour realized by the large-scale use of peat, together with the extensive system of inland navigation, lay at the very base of the whole economic and cultural upsurge of the Netherlands in the Golden Age.

But if one is willing to press the case that far, it seems fit, for the sake of consistency, to consider the savings in land and labour achieved by the spread of drainage mills in the maritime provinces beginning in the fifteenth century. Given the prolonged subsidence of the soil since the Late Middle Ages, it would be hard to overestimate the importance of drainage mills. If it had not been for these wind-driven *poldermolens*, either most of the land in Holland would have become progressively unfit for human habitation and agricultural use, or the resources in land and labour saved by the employment of peat would have largely been spent to operate increased numbers of human or animal-driven mills just to keep the land tolerably dry<sup>23</sup> (according to De Zeeuw's own estimate, the use of 3,000 windmills in industry saved the input of approximately 300,000 people or 50,000 horses<sup>24</sup>). In either case, the savings generated by the use of peat can surely not be rated higher than those realized by that familiar national symbol, the windmill.

The social savings approach has as yet not been applied to other fields of technology than energy use or inland transportation. The reason may well reside in the limitations which will have become obvious from the preceding discussion.

Even if the comparison between a real and a hypothetical situation is accepted in theory as a valid one, it is extremely hard to put the method into practice without making assumptions that largely deprive the comparison of its usefulness. In many cases it may turn out to be almost impossible to identify any alternative technology with which the impact of a given new technology may be meaningfully compared. For example, how could one ever calculate the social savings effected by the introduction of the manufacture of tobacco pipes?

### *3. Productivity change and technological innovation*

The second method for examining the role of technological innovation in economic growth consists in taking as starting point a sector of the economy that is known to have contributed substantially to the general expansion, and then seeking to identify specific changes in technology that preceded or accompanied growth in that particular sector. Needless to say, such an analysis cannot be applied in the early modern Netherlands as rigorously as one would wish. There is as yet insufficient evidence to permit a complete assessment of the role of output or productivity growth in every sector of the economy, or to determine the weight of each sector in the economy as a whole. The figures that have been produced are at best informed guesses. It will, moreover, be hard, if not virtually impossible, to isolate changes in technology from changes in the organization of production. One will often have to settle for the bare observation that a rise in output or productivity was indeed preceded or accompanied by specific advances in techniques, without being able to tell for sure to what extent the latter really influenced the former.

Be that as it may, a few basic facts concerning economic growth in the early modern period (as presented in the contribution by Van Zanden) will hardly be contested: 1) that growth in the Northern Netherlands after 1580 was on average more rapid than before, (2) that it comprised a very broad range of sectors, (3) that annual rates of expansion in industry and international services were higher than those in agriculture or deep-sea fisheries (with the likely exception of whaling); and (4) that gains in output in new or restructured branches of industry like paper making or textile manufacturing generally surpassed those in established industries like brewing or soap boiling. Assuming for the moment that these general assessments are essentially correct, the main task of this section will be to explore whether the observed growth in various sectors of the economy was indeed preceded or accompanied by specific changes in technology.

It may be helpful to adopt a distinction that was previously used by H. van der Wee to describe the general shifts in industrial structure occurring in the Low Countries between the Late Middle Ages and the end of the eighteenth century, and that was in a sense used by Israel in his study on the Dutch Republic as well.

This concerns the essence of growth: productivity increase. Aside from a group of industries whose strength resided in introducing improvements leading to a rise in the *physical* productivity of labour – i.e. an increase in the number of items produced per manhour input – Van der Wee distinguished another group whose growth was due mainly to the enhanced input of highly skilled labour leading to a *qualitative* surplus value per item produced. In the latter case, economic productivity may still increase, even if productivity in a physical sense is stagnant or declines<sup>25</sup>.

If slightly modified, this particular distinction, I submit, can also usefully be applied to understand how technological development contributed to the expansion of the Dutch Republic. The rise in productivity did not occur only in industry, but in other sectors of the economy as well; it did not necessarily result entirely from changes in organization but could also stem from developments in technology; and, finally, it could involve more factors of production than labour alone.

#### *Herring fishing and whaling*

Herring fisheries are the prime example of a sector that saw a decrease in rate of growth of production beginning in the late sixteenth century; after the middle of the next century, the industry was by all accounts in absolute decline<sup>26</sup>. The rise in output which continued up to around 1650 was due to changes in organization and technology that largely dated from the first decades of the fifteenth century: increased concentration of capital and marketing, development of extensive arrangements for quality control by means of close cooperation between producers, introduction of a type of vessel especially suited for use in deep-sea fishing (the herring buss) and continual refinement of the technique of curing herring aboard ship<sup>27</sup>.

Although it remains a moot point whether the last-named development led to a substantial rise in the physical productivity of labour in herring fishing – as savings through reducing time spent in port may well have been offset by the increased need for labour to repack the herring once the buss had delivered the catch on land – there is no doubt that it resulted in long-term advance in economic productivity thanks to the continued enhancement of quality. Indeed, the quality of pickled herring from Holland improved to such an extent that by the late sixteenth century it was far superior to any of its rivals. Dutch herring fetched higher prices than herring marketed from England, Scandinavia or France<sup>28</sup>. The elaborate institutional arrangements for the fishing industry which developed in the early modern period largely served to secure this established lead in quality and the enhanced level of prices that went with it, even to the extent of ultimately reducing the volume of production<sup>29</sup>.

Developments in whaling were exactly the opposite of those in herring fishing. Whale oil was generally held to be of lower quality than vegetable oil long before the start of Dutch whaling around 1610. This became all the more true when the

practice of boiling the blubber on the spot at Spitsbergen was gradually abandoned in the middle decades of the century in favour of processing the whole catch in Holland. Once the charter of the Noordse Compagnie, which monopolized whaling from the Netherlands from 1614, had expired in 1642, total production in terms of the number of whales caught expanded rapidly from some 150 per year to a level of 500 to 1500. The few technological changes introduced between 1610 and 1670, such as the improvement of harpoons or the doubling of the hull of the whaling ship, were aimed at increasing physical productivity or preventing loss of capital rather than enhancing quality. Efforts to raise the total value of the catch by devising new uses for the by-product, whale-bones, remained largely unsuccessful until changes in fashion in the last decades of the seventeenth century eventually led to a sudden rise in demand<sup>30</sup>.

### *Agriculture*

Growth in agriculture, which started long before the Dutch Republic came into being, presumably reached its peak in the period between 1580 and 1650. Output and productivity appear to have risen more rapidly than before. Both De Vries and Van Zanden have estimated that the productivity of the land in the coastal provinces between the 1570s and the middle of the seventeenth century increased by some 50%<sup>31</sup>. The evidence collected by De Vries strongly suggests that the expansion stemmed both from changes in the organization of production – viz. increased specialization among rural households – and from changes in technology.

Output per farm improved due to a variety of innovations such as regular manuring, crop rotation, better breeding practices, improved feeding methods and the development of more advanced drainage techniques<sup>32</sup>. Drainage windmills spread throughout the maritime provinces of the Northern Netherlands after the early fifteenth century<sup>33</sup>. In the eastern part of Delfland (near Delft), for instance, the number of *poldermolens* rose from six around 1440 to fourteen in 1483 to eighteen in 1552<sup>34</sup>. In the district of Schager Koggen and Nedorper Koggen in the northern part of Holland their number increased from just one in 1467 to five in 1514, fourteen in 1544, seventeen in 1584 and twenty-two in 1653<sup>35</sup>. Improvement of drainage further involved building dikes, sluices and reservoirs and introducing detailed rules for regulating the water level. The net result of this whole set of technological advances was both a rise in the quality of the soil and a more productive stock of cattle. The diffusion of new mechanical devices that permitted significant savings in labour, such as winnowing mills, horse- (or dog-) powered churn mills or horse-drawn threshing blocks appears not to have started until after the middle of the seventeenth century<sup>36</sup>.

The tendency to improve economic productivity by concentrating on the production of high-quality goods was less pronounced in the agricultural sector than in the herring fisheries. There were pockets of 'luxury' producers, to be sure, like

bulb growers near Haarlem or tree cultivators in the neighbourhood of Boskoop<sup>37</sup>. But tobacco cultivation in Utrecht and Gelderland flourished rather by moving to the opposite side of the spectrum, viz. by supplying cheaper produce than the fine tobacco imported from America<sup>38</sup>. And the madder producers on the islands of Zeeland and South Holland, who boasted a tradition of quality control that went back to the middle of the fourteenth century, always took pains to cater to more than one section of the market. The hallmark of madder growers in the Netherlands up to the nineteenth century was precisely their ability to deliver their produce in every variety and quality that might be demanded. All the while the technology employed remained essentially unchanged<sup>39</sup>.

### *Merchant shipping*

By all accounts, the shipping industry of the Northern Netherlands expanded extremely rapidly both before and after the Dutch Revolt, though the rate of growth in the size of the merchant fleet may have slowed down somewhat after the 1580s. As in agriculture, the expansion rested, at least in part, on a rise in physical productivity. According to the well-known study by Violet Barbour, by the 1620s labour productivity in Dutch merchant shipping was the envy of foreigners. The ratio of tonnage served per man on Dutch vessels was said to be at least thrice as high as on English ones. The shipping industry in England managed to raise its own productivity later in the century precisely by adopting various features of ship design that had earlier been developed in the Dutch Republic<sup>40</sup>. Meanwhile, from the 1630s onwards, productivity in the Dutch merchant fleet increased still further. In every branch of shipping, the ratio of tonnage per man on Dutch merchantmen around 1700 was half as much again as seventy years before<sup>41</sup>.

These sustained gains in productivity were undoubtedly partly achieved by advances in technology. During the sixteenth century, and especially after 1550, Dutch shipbuilding saw an extremely swift and broad proliferation of ever more efficient designs, which in the 1590s culminated in the introduction of the efficient ship par excellence, the *fluyt*<sup>42</sup>. It was first and foremost the diffusion of this specific type of ship that permitted the vast increase in labour productivity in the Dutch merchant marine in the early seventeenth century (and later in the English merchant navy as well). While the rate of change in designs of sea-going vessels slowed down noticeably after 1630, improvements in rigging continued throughout the seventeenth and eighteenth centuries<sup>43</sup>. These ongoing changes in technology, together with a more efficient organization of work aboard ship<sup>44</sup>, may to some extent explain the rise in productivity of labour between 1630 and 1700.

The productivity gains by improvements in ship design were consolidated and probably even extended by changes in other domains of technology that were of crucial importance to the shipping industry. First, the benefits of the newly introduced types of ship in the ocean trades could only be reaped to the full thanks

to the rapid advances in navigation techniques that facilitated the expansion of Dutch ocean shipping starting in the late sixteenth century<sup>45</sup>. Second, the construction of new harbour facilities and the introduction of new dredging equipment and other devices to ease the safe passage of ever larger ships in all probability reduced loss of time in ports and on access routes to ports.

J.P. Sigmond identified a total of 38 harbour extension schemes carried out in sixteen different ports in Holland, Zeeland and Friesland between 1570 and 1650, as against only seven (in three cities) during the seven preceding decades and just five (in as many towns) in the following 150 years. In many port towns that participated in international shipping, the total harbour area grew twice or even three times as large. The growth in capacity usually accompanied an increased separation of domains inside the port area between the main branches of shipping – merchant marine, fishing industry, Navy and East India Company – and an extended supply of such vital facilities as cranes, sheers, lighters, repair yards and buoyage and pilotage services<sup>46</sup>. In order to stave off the perennial threat of silting, every port city of any importance made continual efforts to remove the amassed mud from its harbour by means of dredge-nets, scrawlers or mud-mills. The town of Amsterdam, which around 1590 was the first to adopt a mud-mill with a rotating chain of scoops, had two large and two small copies of this engine in operation by 1677. The capacity of the mills substantially increased after 1620, when human labour was replaced by horsepower<sup>47</sup>.

### *Industry*

Among all sectors of the economy it was probably industry that saw the highest rates of growth after 1580. But industry by no means presents a picture of unmitigated technological advance. The relationship between expansion of industry and change in techniques was in fact somewhat uneven. Among the three branches that traditionally constituted the core of the industrial sector in the Northern Netherlands and continued, or recommenced, to grow after the late sixteenth century – brewing, shipbuilding and textile manufacture – each showed a quite different rate and pattern of technological evolution.

The beer industry did not see any marked change in the process of brewing itself. There was no improvement in quality that could even remotely be compared to the spread of hopped brewing in the fourteenth century. The few innovations that occurred largely involved input of energy and supply of raw materials. Between 1560 and 1650, breweries increasingly changed over from peat to coal, and some of them perhaps attempted to reduce production costs by adopting fuel-saving devices<sup>48</sup>. It is striking that among the more than twenty fuel-saving inventions known to have been proposed in the Netherlands between 1500 and 1650, all but three were certainly intended for use in breweries<sup>49</sup>. In order to ensure a continual supply of fresh water in wintertime – and thus prevent any stoppage in production – ten brewers in Amsterdam in 1651 decided to jointly invest in an ice-breaker to

keep open the canals from nearby Weesp, where they fetched their water<sup>50</sup>. A new device for that purpose had been patented as early as 1633 by an inventor from another beer-producing town, Elias Christiaensz. of Haarlem<sup>51</sup>. The ice-breaking enterprise remained in business for over 130 years.

In shipbuilding, increased productivity after 1600 was in all probability due both to ongoing changes in organization and to developments in production techniques. The tendency towards centralization of production with a small number of firms, which was already in evidence in established centres of shipbuilding like Haarlem by 1600<sup>52</sup>, became even stronger in the district that came to dominate the industry after 1630, the Zaanstreek. Production time per ship was reduced by standardized design, more rigorous organization of work, increased division of labour, and large-scale adoption of capital equipment that had first been introduced on wharves in the late sixteenth century, such as cranes, jackdaws and slipways. Construction costs were further kept down by the easy and relatively low-cost supply of sawed wood, thanks to the huge expansion of timber sawing in the Zaanstreek since the introduction of the wind-powered sawmill in the 1590s. The number of sawmills along the Zaan rose from 53 in 1630 to 256 by 1731<sup>53</sup>.

Just like shipbuilding, textile manufacturing owed its renewed expansion after the 1580s partly to the employment of mechanical devices that enhanced the physical productivity of labour. Fulling mills, which had been introduced in Holland from Flanders and Brabant about the middle of the sixteenth century<sup>54</sup>, spread to all major cloth-producing towns, and to the Zaanstreek, between 1585 and 1640. Leiden had 25 of them by 1650. Most of these were horse-powered mills or windmills<sup>55</sup>. Twining mills expanded both in absolute numbers and productive capacity up to the middle of the century. Thanks to the introduction of an advanced type of hot press, the time required for the pressing of serges (in the finishing stage of the manufacturing process) was reduced from six hours in the 1580s to just one hour in the 1630s<sup>56</sup>. Ribbon weaving was revolutionized by the appearance of the ribbon frame, patented in 1604, which permitted a single worker to weave twelve ribbons at a time (and by 1670 even twice as much). It was widely adopted in all the main textile centres of Holland by the late 1660s<sup>57</sup>.

But the principal thrust of technological development in textile manufacturing aimed at bettering the *quality* of production. The development can be roughly divided into two phases. In the first one, lasting from c.1590 till the 1630s, the value of the fabrics produced was enhanced by improvements in the finishing stage. These improvements mainly involved the employment of new materials, or new combinations of materials, in dyeing operations (for instance indigo, cochénille, potash and tartar) and the large-scale use of human- or animal-powered machinery like calender-mills and polishing mills to give a shinier appearance to the end-products<sup>58</sup>. While improvements of this type continued after the 1630s, the emphasis in technological evolution from the second quarter of the seventeenth century onwards shifted more and more towards the increased use of high-grade

raw materials such as merino wool from Spain, mohair yarn from Turkey and raw silk from China, Persia and later Bengal<sup>59</sup>. The lead of the Dutch Republic in textile manufacturing in the last decades of the century rested, as far as technology was concerned, primarily upon the employment of first-rate raw materials.

What happened in textile manufacturing also occurred in many other expanding industries in the Dutch Republic between 1580 and 1680, both the established ones and the newly founded. The vital technological knowledge that preceded or accompanied growth was, in its initial stages, generally adopted from abroad, but relied increasingly on home-grown innovations as time went on. In many sectors, technology began to be imported even before the outbreak of the Dutch Revolt. Such advances commonly comprised more than just the introduction of methods or machines that permitted a steady rise in physical productivity. They also consisted in the improvement of quality through the growth of skills and the input of new raw materials, or new mixtures of these. And the latter route became ever more important after the second quarter of the seventeenth century.

There were exceptions, of course. The brick industry, for instance, which had grown into a major rural industry long before the 1580s, saw no significant advances in technology during its continued expansion in the seventeenth century. Among the few changes to be observed, the most important were perhaps the invention of new varieties of brick and the use of a horse-powered mill for cleaning clay. Buschenfelt examined a copy of this mill in the 1690s<sup>60</sup>. Sugar refining in the Dutch Republic, which was first established by immigrants from the Southern Netherlands in the 1590s, was similarly unmarked by technological innovation during its recurrent phases of expansion, until the very end of the seventeenth century when many producers began to substitute oxblood for eggs as an agent in the refining process<sup>61</sup>. But evolution in other growth industries commonly conformed to the pattern sketched above.

Earthenware production in Delft, for example, grew into a leading export industry by the middle of the seventeenth century after a number of entrepreneurs in majolica production (which owed its rise after 1560 largely to the immigration of skilled workmen from the Southern Netherlands) from 1620 onwards ventured into the manufacture of faience in imitation of porcelain imported from China. This successful shift towards a higher segment of the market was partly accomplished by a series of changes in technology: the large-scale input of marl from England and Tournay, the development of new methods for mixing this novel ingredient with inland clay, the introduction of new techniques and implements for glazing and baking, and finally, the improvement of skills in decoration<sup>62</sup>. Tobacco-pipe manufacture, introduced in the Dutch Republic by immigrants from England about 1610, saw a continuing evolution in design as well as in glazing and baking techniques in the middle decades of the century due to efforts of native craftsmen. As a result, by the 1680s the industry furnished the market with clay pipes of every quality imaginable, from luxury types down to the most ordinary

models<sup>63</sup>. In another expanding branch of industry that owed its existence to foreign workmen and entrepreneurs, the processing of tobacco, technological advances achieved by Dutch craftsmen from 1630 onwards involved not only an increase in the physical productivity of labour through the application of mechanical devices like wheels, presses and spindles, but also the production of special sauces which improved flavour, flammability and storage life<sup>64</sup>. Innovations introduced by Dutchmen in the manufacture of white lead in the early seventeenth century (which probably started about 1600 on the initiative of immigrants from the Southern Netherlands) likewise involved more than just a minor rise in physical productivity. It led to such an improvement in quality that white lead from Holland ranked first well into the nineteenth century<sup>65</sup>. All the industries mentioned in this paragraph show the pattern of the main improvements being in quality rather than quantity.

Technological change in such growth industries as timber sawing, oil pressing or paper making did not simply consist in the large-scale application of wind power to production techniques that were adopted unaltered from abroad. In the course of the seventeenth century, in every case, the introduction of wind power (which ensured high production per manhour) was accompanied by additional changes in machinery and by improvements in other parts of the production processes such that the quality of the end-product, too, was higher than could be attained by traditional techniques. Windmills in the Zaanstreek could deliver wood more finely sawn, oil better pressed and paper made more perfect than any other production centre in Europe at the time<sup>66</sup>.

Thus the pattern of technological change in the Dutch Republic between c. 1580 and 1680 was in fact more complex than it may appear at first sight. For one thing, change could mean enhancement of the physical productivity of labour. For another, it could mean an increase in quality per item produced. And often the two ways were to some extent combined.

#### *4. Explaining technological change in the Dutch Republic*

##### *Selection of novelties*

How can the striking technological advance in the Dutch Republic be explained? In recent years several authors have hypothesized that the prime determinants of change must have been relative factor prices. Jonathan Israel maintained that investment in technological innovation was largely induced by a combination of high wages and low interest rates<sup>67</sup>. Jan de Vries suggested that the high level of wages in the Dutch Republic induced a strong bias towards the introduction of labour-saving techniques, viz. the application of techniques that involved a more intensive use of capital or of non-human energy sources like peat or windmills<sup>68</sup>.

The evolution of the prices of labour and capital in the Northern Netherlands was very remarkable indeed. Nominal wages in the western parts of the country show a steady increase after the 1540s, leading by 1600 to rates that were consistently higher than those prevailing in Flanders and Brabant. Having stabilized about 1640, they still remained at a higher level than anywhere else in northern Europe until the beginning of the nineteenth century<sup>69</sup>. Interest rates, meanwhile, progressively declined from some 8 or 10% in 1600 to 2 or 4% around 1670, while rates in England, France and Germany at the time were still at least twice as high<sup>70</sup>. Given the rise in wages and the fall in interest rates, it was obviously a rational course of action for Dutch entrepreneurs to adopt labour-saving inventions.

But the development of technology in the Dutch Republic, as we have seen, encompassed far more than just the spread of innovations entailing an enhanced input of capital or energy and reduced input of labour. It also involved the growth of economic productivity by improvements in skills or the use of new combinations of natural resources.

This second route can to some extent be explained by the same factors as the first. Enhancing the 'qualitative surplus value' of production can be an equally rational response to an increase in wage costs as the reduction of labour input. Indeed, there is no compelling reason from a theoretical point of view why the adoption of labour-saving inventions should be the sole reaction to a rise in wages<sup>71</sup>. And the alternative route was not without precedent in history. A similar move had been made, for instance, in the large urban centres of Flanders and Brabant in the Late Middle Ages. At that time, in cities like Antwerp, Bruges, Malines and Ghent, production shifted towards higher-quality goods and services. This shift, as Van der Wee has argued, should be understood as a very sensible response to the increased threat to traditional urban export industries from foreign and rural competitors. Given the prevailing high level of wages in the cities of Flanders and Brabant, it was a perfectly valid strategy for entrepreneurs and urban rulers to foster the growth of high-value production instead<sup>72</sup>.

In the Dutch case during the seventeenth century, it was even more logical to pursue quality improvement because of two additional changes in production factor supply. First of all, the rise of the United Provinces as the leading emporium in world trade combined with the improvement of agrarian production at home and the expanded exploitation of inland natural resources gave Dutch producers access to a larger and more varied supply of raw materials of a better grade and at a lower price than any of their competitors in Europe, with perhaps the sole exception of Venice. Merino wool from Spain, marl from Tournay, silk from Bengal, lead from England, and rags from Germany – in Holland almost everything was in ready supply. Having thus acquired a virtually unique command of natural resources, Dutch entrepreneurs were able to concentrate more on improv-

ing quality than were the bulk of their contemporary competitors (thus further advancing their position in world trade)<sup>73</sup>.

But along with the carrot came the stick. While entrepreneurs in Holland were indeed favoured with an exceptionally rich and cheap supply of raw materials, they also had to cope with another increase in production costs that added to the already heavy burden of wages. The shift towards the employment of more fuel-intensive techniques was in a sense like a move from Scylla to Charybdis. Even if the share of wages in total costs could to some extent be reduced, the weight of the energy bill came to press all the more heavily. True, the Dutch economy was blessed with easy access to peat. But peat prices were almost continuously on the rise during the sixteenth and seventeenth centuries up to the 1670s, both in absolute and relative terms, i.e. compared with the general level of prices and wages<sup>74</sup>. Peat became ever more expensive. Demand was not just pushed up by the growing use of peat as an energy source for industrial production, but also by increased need of peat for home heating. Household consumption in the seventeenth century presumably rose even faster than before, owing to the rapid growth of population and the generally low level of temperatures in winter<sup>75</sup>. The problem could only partly be solved by a shift from peat to coal, as the costs of coal were on the increase as well<sup>76</sup>. And, despite the efforts of numerous inventors between 1500 and 1650, fuel-saving devices had probably not yet reached a very high level of efficiency. Thus the incentive for entrepreneurs to seek alternative strategies for reducing costs remained strong.

#### *The emergence of innovations*

Selecting and applying innovations is one thing; how and why they emerge is quite another. A change in relative factor prices does not yet explain how the technologies employed came to be there in the first place. It would carry us too far to examine here the cognitive sources of all these innovations, but it may be appropriate to suggest at least a number of conditions in the Northern Netherlands that, taken together, probably constituted an extremely favourable environment for the introduction of new things, namely: skills brought by immigrants, political decentralization, lack of restrictions on experimentation, development of institutional arrangements concerning intellectual property, and specialization.

The huge influx of foreigners beginning in the late sixteenth century was perhaps the most conspicuous of the conditions favourable to innovation, but it was by no means the decisive factor. True, there was an immense movement of people from the Southern Netherlands to the North between 1570 and the second quarter of the seventeenth century, which ensured that most of the gains in economic productivity previously realized in Flanders and Brabant were suddenly and massively passed on to Holland, Zeeland and Utrecht<sup>77</sup>. The stock of knowledge in the Dutch Republic was further enlarged by successive waves of immigration

of Sephardi Jews, the occasional influx of skilled people from Italy and England, and the large flow of Huguenot refugees from France from the 1680s onwards<sup>78</sup>.

Even in the heyday of foreign influence, however, there always remained vast areas of technological achievement where the contribution of immigrants was of marginal importance. In the development of shipbuilding or drainage technology, for instance, the contribution of foreigners was close to nonexistent during the entire period of the economic expansion of the Dutch Republic. And, what is equally significant, in many areas of technology where foreign influence did carry some weight for a few decades after 1580, one later finds advances in technology that went well beyond the repertoire of tools, methods and devices initially borrowed from abroad. The roles in the transfer of technology even came to be gradually reversed. Ghent adopted the art of making *legaturen* from Haarlem in 1613; Cambrai twiners fetched their skills and equipment from Holland around 1650; Bruges, Brussels and Malines saw cloth and serge workers and entrepreneurs move down from the North in the 1650s and 1660s<sup>79</sup>.

There were clearly additional factors at work that facilitated the upsurge of technological creativity in the Dutch Republic. David Landes, Eric Jones, Joel Mokyr and other economists have drawn attention to the general importance of political decentralization as providing a fertile ground for sustained innovation in technology<sup>80</sup>, and this favourable condition obtained to a high degree in the Northern Netherlands as well, especially after the Dutch Revolt. As individual urban communities commonly vied with each other in improving the quality of local production or in attracting new economic activities that promised to increase the welfare and employment opportunities of their own citizens<sup>81</sup>, inventors found themselves in a sellers' market. They could profit from privileges granted by local authorities and even play off one city against another. As long as this competition endured, creativity could thrive.

The growth of inventive activity was further aided by the relative absence of restrictions on experimenting. The circumstances that are thought to have stifled technological advance in Venice during the seventeenth century were not present at crucial times and places in the technological advance of the Northern Netherlands, or were at most of minor relevance. While guilds and local authorities in the Northern Netherlands, just like their Venetian counterparts, were strongly committed to protecting quality in production and employment opportunities for full citizens<sup>82</sup>, they usually did not – during the period under discussion at least – prevent the introduction and application of innovations. Absence of restrictions could also result from the fact that there were no bodies with sufficient power to issue or enforce regulations on these matters. In the district of the Zaanstreek, which was the cradle of so many innovations in Dutch industry, guilds did not even exist. Local authorities in this region, which lacked formal urban status, had less coercive power than did governments of autonomous cities<sup>83</sup>.

These conditions may explain why innovations in the Northern Netherlands long continued to emerge without obstacles. To understand why inventions actually did occur, one has to take the analysis yet one step further. According to the theory on economic growth developed by North and Thomas, innovation is encouraged by modifying the institutional environment to the extent that the private rate of return on the invention approaches the social rate of return. Individuals or groups will be willing to undertake substantial expenses for devising new things only if property rights to their intellectual products are reasonably ensured. If not, they will not be prepared to bear the costs of sustained research efforts. On the other hand, institutional arrangements have to be balanced in such a way that society, too, will reap the benefits of the inventions of individual members. If not, growth will not be forthcoming<sup>84</sup>.

The most prominent example of such an institutional arrangement is a patent system. Although North and Thomas themselves in their survey of the economic history of the West do not stress the relevance of patents until they shift their focus from Holland to England, the granting of patents for invention was in fact quite a common practice in the Dutch Republic as well, as the following figures attest:

Table 1. *Number of patents for invention granted by the States General, 1589-1679*

period	number of patents granted
before 1590	9
1590-1599	36
1600-1609	55
1610-1619	81
1620-1629	118
1630-1639	92
1640-1649	39
1650-1659	26
1660-1669	38
1670-1679	24

Source: Doorman, *Octrooien voor uitvindingen*

The actual number granted was even higher than shown in the table, because patents were sometimes also issued by provincial authorities and town governments. Even so, the average number per year between 1590 and 1680 (5.6) exceeded that in other states for which regular series can be obtained, i.e. Venice between 1475 and 1550 (for industry only) (1.4) and the Southern Netherlands

between 1598 and 1700 (0.6). In fact, the number of Dutch patents reached the same order of magnitude as that in England between 1660 and 1740 (5.5)<sup>85</sup>.

Between 1590 and 1630 the system rapidly matured in the sense that both the private and social rates of return were reasonably well secured. The interests of private inventors were guaranteed by the granting of exclusive rights to put their innovations into practice, the penalization of offenders, and the liberty to treat patents as alienable property which could be bought, sold, donated or inherited<sup>86</sup>. The interests of society were safeguarded by fixing a term during which exclusive rights would apply (first usually five to twelve years, later settling on fifteen) and the obligation imposed on patentees to put their inventions into practice quickly<sup>87</sup>. And both sides could profit from the rule, which soon became standard practice, that inventors had to deposit a drawing, description or model of their invention with the authorities from whom they received their patent. Patentees could use these as evidence to fight off competitors, whereas non-privileged parties could employ them to expose fraud<sup>88</sup>.

Even so, there have been many innovations in technology in the Dutch Republic that were not covered by patent law or by some other sort of protective arrangement<sup>89</sup>. This holds true both for improvements in quality (for instance in fisheries) and for technological advances that led to a rise in the physical productivity of labour (for instance in shipbuilding and the shipping industry).

In addition to immigration, political decentralization, lack of restrictions on experimentation, and the development of institutional arrangements concerning intellectual property, we have thus to consider one more factor that helped to create a favourable environment for the emergence of innovations in the Dutch Republic between 1580 and 1680: specialization. Specialization is of course a well-known source of technological advance. It facilitates in particular the opportunities for learning by doing. It proceeds the more easily as the extent of the market expands<sup>90</sup>.

There is no doubt that specialization in the Northern Netherlands indeed grew apace in the sixteenth and seventeenth centuries, and most of all from the 1580s onwards, when the extent of the market increased immensely. Jan de Vries has discussed the technological innovations in the agrarian sector that followed in the wake of the expanding market. The growth of aggregate demand, I submit, pushed technological advance even further by facilitating the formation of groups that specialized in providing technological expertise. During the second half of the sixteenth century, Zeeland witnessed the rise of a select class of specialists in *diking*<sup>91</sup>. Haarlem saw the emergence of a group of ribbon-frame and twining-mill makers who (as a subsection of the guild of carpenters) by the early eighteenth century even demanded a special masterpiece as a precondition for admission<sup>92</sup>. And the number of people in Holland who were well versed in the art of the millwright must have risen significantly as the construction of windmills rapidly increased after 1600. On top of a growing 'normal' need for windmills for drainage

of existing lands, there suddenly emerged a huge demand for windmills for other purposes. In the Zaanstreek, the number of industrial windmills grew from virtually none in the 1590s, to c.40 in 1620, c.160 in 1640 and 584 in 1731<sup>93</sup>. The number of new *poldermolens* built between 1607 and 1635 for the execution of five large reclamation projects in the north of Holland amounted to no less than 170<sup>94</sup>. There were thus ever more opportunities for people to specialize in the making or repairing of mills. Small wonder that foreign observers in the early seventeenth century were so often struck by the proficiency of the Dutch in the manual and mechanical arts.

### 5. Concluding remarks

Economic expansion in the Dutch Republic between c.1580 and 1680 would have been less impressive than it was, if there had not been a wide array of technological innovations in many sectors of the economy. The technological changes comprised far more than the massive employment of particular sources of energy. They were not just restricted to one or two sectors of the economy. Clearly, the advance took place across a very broad front.

The key feature is that many different sectors of the Dutch economy saw a remarkable growth in productivity over a prolonged period of time, due in part to the spread of technological innovations. The increase in productivity consisted in some cases primarily in a rise in the number of items produced per manhour, in other cases rather in an improvement in quality, and frequently in a mixture of the two. Future research will perhaps make it possible to express these gains more precisely in quantitative terms.

The advance in technology in itself may partly be explained by changes in relative factor prices and by growth in the extent of the market, which in turn led to more specialization. But innovations would never have emerged as easily as they did, if it had not been for the peculiar institutional context of the Dutch Republic.

## NOTES

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# VI

## FREEDOM AND RESTRICTIONS STATE AND ECONOMY IN THE DUTCH REPUBLIC, 1570-1670

by

*Marjolein 't Hart*

### *1. Introduction*

'In any event, it was surely one of Europe's great advantages that its first capitalist entrepreneurs worked and flourished in autonomous city-states, hence political units where the influence of landed wealth was necessarily limited [...]. Fragmentation, as we have seen, entailed competition, specifically competition among equals'.<sup>1</sup> Thus David Landes explained the exceptional economic growth of early modern Europe. The absence of a single ecumenical empire, together with division into city-states and nation-states, created the conditions under which resources, science, and technology came to be used in an international contest for power.

The political structure of the Dutch Republic (1579-1795) was a microcosm of the European one. Other parts of Europe had known fragmentation into small political units too, but by the seventeenth century few countries had such a complex constitution as the Dutch confederation of provinces. The central body of the system consisted of the States General and the Council of State, occasionally 'headed' by one of the Princes of Orange. Yet the provinces remained sovereign. Within those provinces, cities had inherited a special legal status, which was further enhanced during the time of the Revolt. Another area in which there was heterogeneity was that, although Calvinism was the preferred religion among public authorities, several other major denominations were tolerated. A 'Dutch' community with common cultural structures and legitimacy norms simply did not exist. Even the provinces were confederations of rural areas and towns rather than integrated political systems.<sup>2</sup>

Such fragmentation into semi-autonomous units had a major impact upon the execution of economic policy by the central state. Nevertheless, following Jonathan Israel, the Dutch state was 'exceptionally strong and efficient' as compared to other major European states, with a 'capacity [...] to protect and promote the vital interests of the first world-trade *entrepôt*'.<sup>3</sup> Israel's view of a strong state seems to ignore the advantages of a federation. Was Dutch economic development fostered by fragmentation and competition, or was it due to efficiency in economic policy?

This article examines the array of capacities of the Dutch state and the impact of the internal contest for power during 1570-1670. First, the main tasks of the central state are delineated, such as the protection of national territory and economic war policies. Tariffs, monetary reforms, and monopolies that were imposed nationwide will be discussed next. Then, the economic policies of the provinces are raised, dealing with fiscal strategies, rural policy, and methods to promote trade and industry. Finally, policy-making of the cities is discussed, dealing with guilds, urban settlement, and welfare.

Throughout these levels, however, several categories of economic policy can be discerned. A first category concerns the creation of favourable conditions for production bearing indirectly upon the economy, such as defence and the safeguarding of property rights, health policies and care for the poor. A second category comprises more direct economic involvement, by granting monopolies and subsidies, and by generating demand through public expenditure. Finally, government bodies can also act as economic actors, for example by constructing wharves, mills, or foundries. As will be seen, this third category was virtually nonexistent in the Dutch case, because the central state, which limited itself to more indirect economic policies, left most direct economic exertions to local authorities.

## *2. Defence and economic war policies*

Defence against outside attack was delegated to the States General and the Council of State in The Hague. An army of the Republic was set up, under the command of the Stadhouder of Holland, and also a navy, divided over five admiralty boards. As most other administrative tasks were taken care of by regional and local authorities, defence expenditures formed the lion's share of the central budget. Only a minor portion was devoted to central administration, foreign policy, and service of the Republic debt.<sup>4</sup>

On the whole, defence policy proved effective during the period under consideration, at least as it concerns the defence of the territory of the Republic. Yet it required a dramatic increase of overall expenditures. The 2.9 million guilders budgeted annually in the 1580s for the war against Spain increased to over 22

million guilders in the 1630s. These amounts fell after the conclusion of peace in 1648, but climbed again in the 1650s due to the first Anglo-Dutch War and the Dutch naval expedition to the Baltic. In the 1660s another peak was reached, caused by the second Anglo-Dutch War, with central expenses amounting to over 30 million guilders. Expenditures slowed down after the 1670s and were to increase again only in the eighteenth century.<sup>5</sup>

The demand generated by the central expenditures of the Republic affected mainly the area of provisioning. Naturally, troops and sailors had to be fed and dressed. These deliveries were mainly local, so that it was the surrounding areas of garrisons and admiralties that profited. Major orders resulted from the construction of vessels for the navy. However, due to mismanagement by the admiralties and because of failing payments by the provinces, fewer ships were actually built than originally planned. Therefore, in cases of foreign threat, most of the men-of-war needed had to be hired or bought. But in the 1650s matters improved, and at least sixty vessels were built.<sup>6</sup>

Another area of government demand was the construction of fortifications, which saw a boom in the late sixteenth century. Walls and fortresses were built on the order of city councils, but such works could also be ordered by the States General and the Council of State. The funding of these projects came partly from the central budget, partly from the province, and the remainder from the township. Bulwarks and ramparts were carefully designed by engineers, the most famous being Simon Stevin and Adriaan Anthonisz.<sup>7</sup>

The role of the central state as employer was limited, as the central government remained small. Only a couple of hundred civil servants came to be employed in government offices. The navy and the army were more important in this regard, although many of the troops - and even some of the officers - were foreigners.<sup>8</sup>

The expenses of the central government were only for a minor part (about one-fifth) covered by central fiscal revenues. The Republic imposed tariffs on incoming and outgoing goods, the so-called *convooien en licenten*, which were collected by the five admiralty boards. The income from these tariffs was spent directly for the protection of international trade and for warfare at sea. Furthermore, the central state imposed a tax on the wholesale of salt, a stamp duty, temporary taxes on beer and soap, and a duty on passports. These restricted revenues were generally used directly to cover the costs of the governing bodies in The Hague. And finally, taxes were introduced in the conquered areas and in the so-called Generality lands. But this tax income was small and the proceeds went to the local administration of those areas again.<sup>9</sup>

The remainder of the central budget, about 80%, was borne by the autonomous fiscal structures of the provinces. During the sixteenth century all provinces had constructed some sort of bureaucratic machinery, mainly for the purpose of tax collection. Each agreed on paying a fixed quota, ranging from a mere 3.5% for

the poorest province, Overijssel, to 58% for Holland, the wealthiest province, housing almost half the Republic's population.<sup>10</sup>

Due to the crucial role of Holland in meeting the costs of war, that province exerted a strong influence upon the foreign policy of the Republic. Also, most federal institutions were located nearby the Holland provincial government in The Hague. Nevertheless, Holland always had to reckon with other provinces' preferences, because of the one-province-one-vote system in the States General.<sup>11</sup> This fact brought about an intensive tradition of bargaining and trade-off politics.

Of enormous significance for trade and industry were the economic war policies. The blockade of the access route to the port of Antwerp in 1585 and the closing of the Scheldt thereafter immediately ruled out one of the major competitors in international trade, namely, the Southern Netherlands. The merchants of Amsterdam and other Dutch ports profited tremendously. The blockade proved less advantageous for the harbours of Zeeland, though. In the short run, a city like Middelburg gained, as it managed to take over several of Antwerp's functions, yet in the long run international trade routes were shifted to the north, avoiding the Zeeland area altogether.<sup>12</sup>

Prohibitions of export to certain countries were rare. When there were prohibitions, the reasons were political, for example the embargo imposed on trade with France in 1657 and 1688 in response to French mercantilist measures, and on English trade during the wars in 1653 and 1665.<sup>13</sup> Another instrument was the Dutch river blockades, such as those imposed in the 1620s and 1630s. Several items were banned from export to nearby enemy territories, notably arms, ammunition, copper, and naval stores, but also foodstuffs, timber, and horse fodder. Such blockades were always highly controversial. In 1621-1622, for example, Holland reluctantly agreed, and only on the condition that herring, fish, and salt were exempted. Yet a couple of years later, several Holland towns would welcome the blockade on the eastern border. In this case, Haarlem and Leiden eagerly wished to shut out Westphalian manufactures, whereas the maritime harbours profited from the diversion of trade from the inland towns in Gelderland and Overijssel.<sup>14</sup>

At times, export bans with a more protectionist character were enacted. The measures were almost always ad hoc, such as a prohibition on the export of wool in 1591 in order to protect the Dutch textile industry, and a law in 1593 prohibiting the import of pins. Another set of laws dating from 1614 prohibited import of dyed woollens, and was followed by similar acts in 1634, 1650, and 1663, whereas a law of 1630 concerned tick weaveries. The latter were voted for because of the poor situation of the domestic industry. Explicitly in retaliation against protective measures by England, the import of English cloth was banned in 1651, at the instigation of Leiden drapers. Similar temporary reprisals were carried out against French mercantilist policies, the restrictions being abandoned again after the end of each of the Franco-Dutch wars. In the meantime, import duties for wool were

always very low in order to stimulate the textile industry. After 1655, they were even absent.<sup>15</sup>

### 3. Tariffs, monetary reforms, and monopolies

Thus, although free trade was generally acclaimed, certain sectors in the United Provinces did have some measure of protection, albeit less than elsewhere in Europe.<sup>16</sup> But in the imposition of most other tariffs, the fiscal argument (to pay for the navy) was the primary motivation. Customs duties originated from the city *convooien*, which were transformed into provincial duties in the 1570s. They were followed by a general list of tariffs for the whole Republic in 1581 with the purpose of financing the war at sea. But it took a long time to obtain uniform levels. For example, in the 1590s Deventer still levied higher duties on beer produced by Dutch cities like Delft, Dordrecht, and Kampen than on beer coming from England, Lübeck, Hamburg, or Bremen. Another thorny issue was trade with the enemy. Prohibition of such trade resulted in frequent evasions and frauds. It proved more profitable to levy high duties instead. These duties on trade with the enemy were henceforth called *licenten*.<sup>17</sup>

A new list of customs duties was published in 1584, although due to strong opposition from Amsterdam and Enkhuizen, several duties had to be lowered. The first major increase was approved in 1603, in response to the poor financial situation of the admiralties. As a result of the Twelve Years' Truce, duties were lowered in 1609-1621, but with the resumption of war most duties returned to the 1603 level. Apart from some minor additions, tariffs remained at the same level up to the end of the war in 1648. Then, after an initial lowering, they were increased overall by one-third in 1651-1655.<sup>18</sup>

In addition, temporary duties existed for specific trade routes for which navy protection was not sufficient. In such cases, a board of directors was set up, whose services were paid for by a levy on cargo. An example of the latter was the board set up in Amsterdam in 1625 for trade with the Levant, which suffered severely from attacks by booty-seeking pirates. This board had the power to enforce the convoying and arming of ships. On occasion it negotiated with pirates, though usually with no effect. In 1631 another board was set up, this time for trade with the Baltic and Norway, because of continual attacks by Dunkirk privateers.<sup>19</sup>

Still, despite the enormous pressures of war and the impoverished condition of the navy, the ordinary tariffs of the Dutch Republic never exceeded 5%, which was quite low in comparison with other countries. After the 1620s the additional costs of the navy were increasingly paid out of provincial taxes. Higher customs duties were opposed by the influential merchant communities wishing to protect the Dutch position in international trade. An additional problem was that each of the five admiralties tried to favour the province and city in which it was stationed:

Amsterdam, Rotterdam, Middelburg, Hoorn (taking turns with Enkhuizen), and Dokkum (later Harlingen). Therefore, frauds in tariffs were deliberately condoned by local authorities so as to stimulate shipping at the expense of other ports. Thus, although import and export duties were decided upon centrally, much of the implementation remained local.<sup>20</sup>

The tariffs were at times highly disadvantageous for specific trading communities. Zeeland bitterly witnessed a further decline of its prosperity with the lifting of the blockade of the Flemish ports of Ostend, Nieuwpoort, and Blankenberge. As a grain-producing province, Zeeland eagerly desired higher duties on incoming cereals, whereas Amsterdam (and Holland) defended the 'free trade policy' for the benefit of its staple market. But within Holland disagreements existed too. The Truce period (1609-1621), with a lowering of tariffs, proved detrimental for the textile industry. Leiden, Delft, and Gouda soon pressed for an increase of tariffs on cloth to the wartime level. The situation improved only after the resumption of war. However, with the signing of the peace in 1648, import tariffs dropped, and again the industrial towns of Holland noticed a sharp drop in production due to cheap manufactured imports from Flanders, Liège, and Westphalia. Eventually, the 1651 tariff list was a compromise between manufacturing and trade-oriented towns.<sup>21</sup>

As with tariffs, monetary policy was a matter of coming to terms with conflicts of interest between regions. Depreciation was always much feared among trade-oriented circles. Yet even the maritime provinces had resorted to such despised measures. As soon as Holland and Zeeland became effectively independent in the 1570s, these provincial governments devalued their silver coinage considerably. Moreover, each of the seven provinces, considering itself sovereign after liberation, claimed the right to mint money, which had hitherto been centralized in Dordrecht. Holland even had two mints (for its northern and southern halves), whereas several towns in the east part of the Republic had received imperial coining privileges in the Middle Ages. The output of these mints varied considerably in unit and alloy, bringing confusion to commercial transactions.<sup>22</sup>

The Mintmasters-General encountered strong provincial opposition in their efforts to increase supervision. But by the time of the Truce, the central government - mainly through effective policies of the Bank of Amsterdam and through strict regulation of the bullion market - managed to obtain a reasonably stable coin system based on the silver *daalder*. Rates of exchange were officially established by the States General. To maintain these standards, after 1647 the central government insisted that one-third of the foreign mints be reserved for minting purposes.<sup>23</sup>

Monetary reform was necessary after the value of silver in the standard coins had declined. In 1659, an official stamp was set on the distinction between real money and money of account, the terms being 'current' money and 'bank' money. The standard coin was assigned a lower intrinsic value, yet the *wisselbanken* were

statutorily required to assess their coins at their former official values. The reform was accompanied by a temporary ban on the export of silver.<sup>24</sup>

In a more direct way, the central government influenced trade by granting monopolies to specific companies. In order to combat excessive competition in the Far Eastern trade in the 1590s, the authorities urged several merchant companies to merge in 1602, creating the *Verenigde Oostindische Compagnie*, or East India Company. This large-scale permanent enterprise obtained a monopoly on trade with the East Indies by decree of the States General. Initially the monopoly was to last ten years, but it was always renewed up to the end of the Republic.

Plans to set up a similar West India Company had been in the air as early as 1606, yet it was halted in view of the expected truce with Spain. In 1614, a four-year monopoly was granted by the States General to the *Compagnie van Nieuw Nederland* for trade in furs with North America. This monopoly was partly transferred to the West India Company in 1621, which came to dominate trade with the Americas. And in order to combat English whalers, the *Noordse Compagnie* was granted a monopoly on whaling, which lasted until 1642.<sup>25</sup>

#### *4. Provincial strategies in taxation, trade, and rural policy*

As noted above, few central taxes were imposed. Instead, the provinces retained fiscal autonomy, paying the required sums according to a fixed quota to the central government. Naturally, taxation strategies varied widely from one province to the other, due to the differing institutional make-up of the provincial governments. Inland, the semi-autonomous corporations of the gentry and the traditional division into rural areas weighed relatively more heavily. In the maritime west, cities had an overwhelming influence in provincial governments, where they outvoted the rural and noble delegates.<sup>26</sup> Nevertheless, everywhere the main argument for provincial taxation was fiscal, resulting in the levy of those duties which were likely to provoke the least resistance. The consequence was that traditional local duties endured, with some new taxes added only in the maritime regions.<sup>27</sup>

Another factor explaining the fiscal variety among the provinces has to do with the old crown domains that had passed into the hands of provincial authorities. Friesland was the province owning the most extensive domains, and therefore needing less recourse to taxation. But in most other provinces the extent of such domains had been drastically reduced. Many domains had been sold during the 1560s because of financial difficulties of Philip II, and the policy of the independent provinces themselves had been directed to sale of these lands too.

A further influence on fiscal strategies was the number of towns in the area. Urbanized regions could easily levy indirect taxes on consumption and trade, whereas rural districts had no choice but to obtain their funds from taxation on land. Taxes on property were less elastic and more difficult to assess as compared

to excises and customs. This is not to say that taxation did not affect trade. In Holland, the province which levied the most excises, complaints were voiced over the heavy overall burden of taxation. The burden was not a figment of the imagination, as this province was depicted by foreign contemporaries, too, as being the most heavily taxed in Europe.<sup>28</sup>

A major side effect of the emphasis on public finance at the provincial level was the emergence of consolidated provincial debts. When expenses could not be paid out of current tax revenues, loans were contracted, which were converted by the provincial government into long-term obligations. The most famous example is the public debt of Holland, which sky-rocketed as a result of the Eighty Years' War. Payment of the debt was secured by a wide array of excises and occasional levies on property. Rates of interest were modest, declining from 8 to 12% in the late sixteenth century to only 4% at the end of the seventeenth century.<sup>29</sup> But the investments were highly secure, which was a major advantage for merchants wanting to spread their risks. Other secure investments were bonds sold by the Republic, the provinces of Zeeland and Utrecht, the five admiralties, and the major cities.<sup>30</sup> Manifold investors in the debt (among them many town council members, responsible for voting on new taxes) profited increasingly from the state. Debt charges came to absorb more than half of the expenses of the province of Holland in the 1660s.<sup>31</sup>

Despite the high tax burden in the Republic, which was caused from first to last by war, taxation did to some extent stimulate commercialization. It instigated peasants to produce for the market and it channelled funds to the larger urban communities. And although fiscal demands were quite burdensome in the maritime west, urban capitalists invested huge sums in the countryside again by way of land reclamation and canals.<sup>32</sup>

Of course, such rural policies varied by region. Cities exerted a major influence in drainage boards, partly because so much land was owned by burghers, and partly because the main investors in polder projects were urban based. Supervision of dikes, dunes, and polders was traditionally entrusted to specific boards of *dijkgraven*, *heemraden*, and *waterschappen*. Maintenance of dikes and polders was an obligation divided among the households that benefited from it; the boards supervised the system and fined the negligent. In general, provincial authorities intervened only indirectly.<sup>33</sup>

Before the Revolt, supervision of sea dikes had been vested in provincial authorities. In the 1570s however, this tradition was largely neglected in Holland, and only revived after the floods of the 1670s. Occasionally, the province intervened, such as in 1587 over the neglected Schellingwoudse Dijk, for which the provincial government provided 2,500 guilders, and in 1610 for the construction of a dike near Callantsoog at an estimated cost of 60,000 guilders. Upon request of the island of Texel, provincial authorities also supervised construction

of a sea dike. The province showed concern for the Westfriesche Zeedijk too, which they tried to improve by promising a monetary subsidy of 200,000 guilders.<sup>34</sup>

As in Holland, the local drainage boards in neighbouring Utrecht and Zeeland held much power. No provincial inspection existed, the provinces restricting their task to approving the decisions of the boards and settling disputes. In Zeeland, though, some financial support was provided by the province for impoverished polders bordering the sea, the so-called *calamiteuze polders*.<sup>35</sup>

In the province of Groningen, a much more active rural policy was pursued. Here, provincial inspection of sea dikes was a general rule, which can be explained by the fact that the province was a major landowner itself, after confiscation of former church lands in 1594. In 1650, the province even paid for two-thirds of the pileworks, the remainder of the financing being provided by landowners. In Friesland, too, the province exercised close scrutiny starting in 1579 through a provincial board of commissioners that oversaw the local drainage boards. This supervision proved effective, for example in 1610, when floods had devastated several sea dikes. As the repair work carried out by the local boards was insufficient, the province promulgated a rule that the dikes be improved to a specified height. Furthermore, common watermarks were established for whole regions and for sluices in particular, which was an important aid for shipping. Also, the dikes of the Middelzee were constructed by the province of Friesland.<sup>36</sup>

Polder construction was a major concern in Holland, Utrecht, and Friesland in particular, although most of the provincial intervention was indirect. Provinces offered tax exemptions to new landowners for a considerable period of time, bought land from unwilling participants, and granted far-reaching self-governing powers to the new polder boards. Holland and Utrecht were especially interested because of the damage to land from extensive peateries. Peat digging had created lakes, which reduced tax revenues from land. From 1592 and 1593 onwards, several decrees were issued by the provinces of Holland and Utrecht, stipulating that drainage boards were to be responsible for making the land fit to use again after the peat had been dug away. These measures proved little effective, though, and improvements came about only in the eighteenth century through the introduction of a specific tax called *stuiversgeld*.<sup>37</sup>

However, not all rural policies were aimed at the improvement of economic conditions in the countryside. In 1531, the towns of Holland had won in a conflict with landlords over trade and industry in rural areas. This *Order op de Buitenering* prohibited retail trade between countryfolk and townspeople and the establishment of new industries within the vicinity of towns. Cities frequently disputed the right of weighage in villages and tried to obstruct transport routes that avoided their markets.<sup>38</sup>

Urban powers became more extensive after the Revolt, as cities came to dominate the body politic. The provincial government of Groningen even granted the city of Groningen a highly disputed set of staple rights in 1599, which forced

the surrounding countryside to conduct its trade through the city market. Brewing of beer by inhabitants of rural areas was prohibited too. In 1600, the States General even promulgated a rule, for the whole Republic, that all breweries outside cities had to be demolished.<sup>39</sup>

Nevertheless, some rural industry sprang up, at times even with the support of urban elites. Around Tilburg a significant woollen industry developed, as Leiden entrepreneurs wished to profit from low wage levels in the countryside. But the most famous example of a successful rural industrial area was the Zaanstreek in Holland. The villages there, which had been employed by Amsterdam in the wood trade, started to develop their own mills and wharves, aided by their knowledge of trade routes, the low level of wages, the absence of guilds, cheap land, and an abundance of timber.<sup>40</sup>

Trade conflicts were frequent among cities too. The assignment of market rights, together with the authorization of weigh-houses, had been transferred to provincial authorities during the Revolt. Neighbouring towns bickered over the right to hold annual fairs. Claims by staple markets (such as Groningen and Dordrecht) even drew distant communities into the disputes.<sup>41</sup>

Due to conflicting interests of trading cities in Holland, shipping was hardly stimulated by this province. Only a couple of actions were undertaken, such as the deepening of the Dordsche Kil in 1599 and 1650, and the improvement of the Merwede in 1596. Some canals were dug, which improved communications between cities, in particular for the *trekschuit* system. The existing regular shipping services between towns, the *beurtveren*, were intensified too. The costs were borne by local communities and financed by way of fares and local duties. However, intercity rivalries prevented the digging of several new canals.<sup>42</sup>

Utrecht, a province less affected by such rivalry among cities, proved more active, and deepened the Vaartsche Rijn, widened the Eem River, and took care of the shallow parts of the Rhine and the Lek. The silting up of major rivers worried the inland provinces in particular. For rivers at the eastern border of the Republic, some funds were even provided by the central authorities - not to stimulate shipping, but as a defence strategy. However, no effective policy came about, due to provincial bickering over costs. In a struggle over sovereignty, moreover, Arnhem refused to allow the Council of State to supervise the works in its territory. Indeed, by 1672 the Rhine had become so shallow that French enemy troops experienced no difficulties at all in crossing the river.<sup>43</sup>

In comparison with waterways, roads over land were neglected even more. Their maintenance was delegated to local rural boards or *waterschappen*. For a long time, roads were made only to fill in the gaps in the network of waterways. Holland issued a decree in 1645 for the construction of roads, which was hardly efficacious. Again, more than any other province, Utrecht took care of its roads over land, in particular through ordinances of 1662 and 1666 stipulating general rules for the condition of roads and bridges. But frequent coach services came into being only

after 1660. Coach travel was not very comfortable, as the first non-urban paved road dated only from 1671, connecting Hoorn to Enkhuizen.<sup>44</sup>

Although provincial action to stimulate trade was rare, it was not totally absent. Upon request, new tools and processes were granted patents. A patent typically granted exclusive rights to production for a certain number of years, mostly ten to fifteen, the province imposing penalties on the use of the invention without authorization. Renewals and methods learned abroad were protected too.<sup>45</sup>

An exceptionally strong protection existed for the herring fisheries, the 'mother trade' of the Dutch. A board was installed, in which the following cities held seats: Rotterdam, Den Briel, Delft, Schiedam, and Enkhuizen. This *College van de Grote Visserij* supervised trade, controlled the barrelling and salting of the fish, coordinated journeys, protected the vessels with convoys, collected taxes from the fishermen, and from 1625 even exerted high legal powers over the vessels and their crew. The board declined requests from new centres of herring fisheries wishing to be represented.

The central state supplemented protection of the fisheries with a couple of measures. Export of Dutch fishing boats was prohibited, and export of material for shipbuilding, such as rope and masts, was permitted only by explicit consent. Staves and herring barrels were not to be exported either, and high import duties were levied on foreign-caught herring. As for whaling, similar rules were imposed: Dutch sailors were not allowed to take part in whaling for another country, and materials for whaling were not to be exported.<sup>46</sup> As for other goods, few regulations existed at all. Madder, a typical Dutch crop used for dyeing, was protected by an export ban on its seeds and the necessary tools. A prohibition on the import of pepper and nutmeg was issued because of rumours about dilution of the Dutch East India spice trade. Similar rules prevented the mingling of hops and the dilution of flax with hemp in the 1620s.<sup>47</sup>

### 5. *Urban economic policies*

Trade and industry were influenced less by the central state than by the urban *keuren*. Indeed, local government was given a boost by the Revolt at the expense of central power. City councils, whose members were predominantly chosen by co-option and only rarely by the guilds, saw their powers increase. The larger cities gained a significant say in the provincial government, and thus had a voice in increasing provincial taxes. The powers of judicial bodies remained largely unchanged, most responsibilities devolving to city sheriff and bailiffs. In some provinces, a higher court of appeal existed. But in the case of Holland the jurisdiction of such courts was quite limited, as any lawsuit against a city government could be appealed only after the city council in question had approved of the intervention.<sup>48</sup>

Towns, in general, took care of their own roads, bridges, embankments, culverts, fortifications, hygiene, and (at the end of the seventeenth century) lighting. To raise the necessary funds, the inhabitants of the street were often charged with additional duties, or neighbourhoods were charged explicitly with a task. Houses could be expropriated to make room for fortifications or market places. Polluting industries were located at the periphery, and dredgers were bought to keep canals and harbours clean. To increase security, a town like Hoorn stipulated in 1608 that all thatched roofs should be replaced by tiled ones. Firefighting was a semi-official task, which was extended after the fire engine was improved in the 1670s.<sup>49</sup>

At harbours and markets, taxes (weighage duties) were paid and wares were inspected on site. The unloading of ships was strictly regulated. For instance, peat had to be carried by official town carriers. Towns intervened in the way goods were sold on the market, and specific locations were assigned.<sup>50</sup>

For the protection of their trade overseas, cities housing one of the five boards of the admiralty cherished this institution. They aimed at the appointment of officers willing to listen to their faction's interests. Although all harbours could appeal to the service of the convoying vessels of the navy, some organized their own convoys too. Such companies were not always merely defensive: those with obvious pirating purposes sometimes received authorization from city councils.<sup>51</sup>

For transactions at home, a major step forward was the institution of the public bank of Amsterdam in 1609, the famous *Amsterdamse Wisselbank*. Originally, its main task was to combat disorder in money circulation, the city granting the new bank a monopoly on exchange. But the bank's role was extended such that any bill of exchange valued at more than six hundred guilders had to be deposited with the bank, with the result that almost all leading merchants held an account with the bank. Although the bank's statutes forbade the use of its stocks for commercial credits (funds were to be deposited only), a loan was granted to the East India Company in 1615, and again several times later during the period of the Republic. And in 1624, Amsterdam lent funds to the provincial government, drawn from the bank's funds. The capital was never paid back. The new town hall was partly financed by the bank too, and in 1650 the city advanced bank funds to the Stadhouders William II.<sup>52</sup>

Similar public banks, though none with a role comparable to the Amsterdam Bank, were set up in Middelburg (1616), Delft (1621), and Rotterdam (1635), all supervised by their respective city council. The Bank of Middelburg also advanced sums to both the East and the West India Companies. In addition, almost every major town had its own municipal lending bank. In Amsterdam, for example, the Bank van Leeninge was set up in 1614, advancing funds to small private ventures and major merchant enterprises alike. The establishment of these public banks lowered transaction costs significantly. Moreover, a Chamber of Assurance (also under supervision of city authorities) came to control the insur-

ance business. The sale of goods was channelled increasingly through the public bourses (in Amsterdam since 1611). Price lists were published, for all to read. The general careful management of funds secured the existing system of property rights, which favoured the growth of commerce and allowed an unequalled accumulation of capital, with lower rates of interest than elsewhere.<sup>53</sup>

In this way, through the endorsement of local institutions like banks and bourses, city authorities pursued an active economic policy. They also judged over guild regulations. Some guilds were even erected by city authorities. But the guilds' claim of share in city government was small. During the Revolt, city authorities managed to further minimize the influence of the guilds, not a different task as guilds had traditionally been weak in the mercantile communities.<sup>54</sup>

In this respect Dutch guilds differed from similar bodies in other parts of Europe. But there were other differences as well. In contrast to most guilds in German cities, not all Dutch guilds had forced membership for persons engaged in their trade, and not always did the guilds own a monopoly on production. Many new industries had no guilds, for instance sugar and silk production in Amsterdam. Also, some guilds were loosely constructed and had few restrictions, whereas others included merchants or *reders*, whose interests were primarily in quality improvement. Dutch guilds were also less closely supervised by public authorities as compared to France, where guilds had been erected by the Crown with the purpose of benefiting the central government in Paris through the regulation of tax payments.<sup>55</sup>

One of the industries in which city governments showed great interest was shipbuilding. Land was consistently set aside for use by shipbuilders. There was a sharp increase in such development projects around 1600. Up to the late seventeenth century, cities frequently subsidized the development of new shipbuilding docks and constructed cranes for aiding native shipbuilding.<sup>56</sup> Likewise, urban economic policies supported the more traditional textile and beer industries.

Restrictions on production were imposed, nevertheless, by the power of city authorities to limit the number of masters and journeymen. As the Dutch economy grew, proprietors of smaller workshops demanded more protection against 'foreign' competition. New guilds came to be erected in the late sixteenth and early seventeenth century too, even in the maritime trading centres. As for wages, however, local authorities meddled only to the extent of protecting journeymen when master artisans tried to lower existing wage rates.<sup>57</sup>

Some guilds acted to prevent mechanization. In Rotterdam, a major fulling mill could not be erected, as city authorities feared violence from the journeymen. In Amsterdam, timber sawers protested the introduction of a sawmill, which was invented in 1592. They ultimately lost, however. In Leiden, in 1604, the guild of ribbon makers objected to mechanization by means of a ribbon loom producing up to twelve ribbons at the same time. At first, city authorities were prepared to listen to the guild's demands. Then, it was feared that production was going to

shift to Delft (where the guild was more tolerant), and Leiden had the new loom installed after all.<sup>58</sup>

Obviously, intercity rivalries created possibilities for entrepreneurs bent on modernizing. Whereas the Utrecht guild of tick weavers was highly restrictive, Rotterdam and Schiedam gave this industry greater liberty. As central restrictions were absent in the Dutch Republic, crippling regulations imposed by guilds in one town could not seriously hamper the welfare of the rest.<sup>59</sup>

#### 6. Settlement policy and the attraction of skilled workers

Another area having a major bearing on economic policy was the settlement of migrants. Towns manipulated the number of inhabitants by raising or lowering the requirements for citizenship (*poorterschap*), although one could often be an inhabitant (*ingezetene*) without being a burgher or *poorter*. For example, the rates for *poorterschap* in Amsterdam were increased in 1624, 1630, 1634, and again in 1650. *Ingezetenen*, however, enjoyed fewer privileges, whereas membership of most guilds was only open to *poorters*.<sup>60</sup>

A major influx of new inhabitants occurred during 1585-1595, continuing up to the 1620s, made up of fugitives from the Southern provinces. Exact numbers are unknown, yet estimates mention a level of 125,000. In some Northern cities (Leiden and Haarlem) as many as two-thirds of the inhabitants were refugees from the South. In the late seventeenth century, another substantial exodus followed, this time consisting of French Huguenots, numbering 50,000 to 75,000. They started to arrive in 1661, and the main wave followed in the 1680s.<sup>61</sup>

During these massive migrations, many city authorities pursued an active policy to attract the skilled artisans and merchants among the flow. They offered specific advantages, such as tax privileges, free housing, and free burghership, and even working capital bearing no rent. Often, the new settlers were allowed to practise their trade outside the guilds. At times, premiums were even paid. For example, in 1577 the city of Haarlem contracted Jan Hendrixsz from Duffel in Brabant, who promised to work for six years in Haarlem in return for 72 guilders. In 1598 34 immigrants obtained sums ranging from 300 to 700 pounds for operating a loom in Haarlem. Rotterdam, likewise, offered privileges to immigrant Flemish entrepreneurs. Gouda converted six disused monasteries into workshops for weaving and dyeing tapestries, manned by Flemish refugees. In Leiden, Walloon immigrants introduced new mills for the fulling of woollen cloth in 1585, and the manufacture of light cloth was given a boost by refugees from Hondschoote. The new products opened up fresh markets and diversified production, making it less vulnerable to fluctuations in demand.<sup>62</sup>

Similarly, with the arrival of French Huguenots in the late seventeenth century, towns offered favourable settlement conditions for this new wave of entrepre-

neurs. As a result, several luxury trades were stimulated, mainly in printing and paper making, the manufacture of soft hats, silk and velvet, yarn and cambric, fans and printed wall paper, and glass.<sup>63</sup>

Other immigrants also benefited from favourable settlement conditions. In 1610, the city of Rotterdam attracted a large group of Portuguese Jewish merchants by allowing them to hold their own religious services. And weavers from Aken (Aix-la-Chapelle) who settled in Amsterdam in 1614 demanded, and got, a subsidy of 50 guilders for each loom.<sup>64</sup> In all, during the seventeenth century the Dutch Republic was a net recipient of immigrants from a large part of Europe. Living conditions in the maritime west of the Dutch Republic seemed attractive. And indeed, recent calculations have shown that in the late sixteenth and early seventeenth centuries purchasing power compared favourably with other major European countries.<sup>65</sup>

But urban settlement policies did not always yield a net profit for the region. Several towns in Holland tried to pinch skilled workers from each other. In 1595, Delft secretly attracted Flemish textile manufacturers living in Leiden by offering them 900 guilders, free housing, and free labour. Alkmaar persuaded the famous damask-producer Passchier Lammertijn to move from Haarlem by offering him an interest-free loan, free housing, and some orphans as unsalaried workers for his workshop. Also, eight major merchant-entrepreneurs in says and fustians left Leiden and settled in Haarlem, for which they received a premium of 1200 guilders each. And in 1616 Hoorn drew on the city budget to build houses for wool weavers from Alkmaar.<sup>66</sup>

Guilds could prove restrictive to the settlement of foreigners. At times, native-born craftsmen enjoyed priority, such as in Amsterdam, where journeyman masons and carpenters had the right to demand expulsion of foreigners in case of insufficient work. In 1632, Amsterdam hatmakers were forbidden to contract foreigners. Foreign craftsmen could also be obliged to cede part of their wages to the guild. In The Hague, the period of training for immigrant linen weavers was doubled. Yet such regulations were by no means valid for all guilds or for all cities. Leiden's guilds, for example, had no such restrictive policies.<sup>67</sup>

Of course, public authorities were apt to clash with guilds, if they tried to attract skilled foreigners by compromising guild regulations. Frequently mentioned privileges granted by city authorities to immigrants were exemption from a master's test and exemption from guild dues. Guilds sometimes protested such actions on the part of the city; for example, in 1590 the Haarlem guild for carpenters and chest makers demanded that Flemish loom makers should pass a general master's test in carpentry. But the city declined the request in view of the enormous contribution of Flemish loom makers to the material well-being of the city.<sup>68</sup>

### 7. *Welfare and health policies*

As for welfare policies, the central state and the provinces left most of the work to local authorities. The running of many almshouses and orphanages was turned over to the city after the church applied to the city for support. Some health care was provided by doctors and midwives paid from city funds. Public schools were established, alongside the parochial ones.<sup>69</sup> And despite the lack of central legislation, the system of relief for the poor in the Dutch Republic was, by contemporary standards, relatively well organized. Foreign travellers noticed fewer vagrants and vagabonds roaming about than elsewhere. They praised charitable institutions for their number, wealth, and efficiency, and marvelled at the fact that the bread distributed as alms was made of wheat instead of the expected coarse rye.<sup>70</sup>

Of great importance is that during the Revolt monastic lands were confiscated. Revenues from church property had been used to maintain the clergy, but as the new clergy was radically reduced in size, funds were liberated for the purposes of charity and education. Indirectly, this policy influenced the level of literacy, which was quite high in comparison with other countries.<sup>71</sup>

As far as welfare is concerned, competition among religious sects proved advantageous. Almost every denomination maintained its own system of relief for the poor. Due to the requirement of the Calvinist church that one had to be a member in order to receive support, other churches organized their own relief to prevent loss of members. Welfare payments from the city were often no more than supplementary. In addition, some guilds had their own relief funds for widows, the elderly, and the disabled. But the number of poor seems to have increased dramatically during the early 1650s due to the first Anglo-Dutch War. Leiden, for example, was notorious for the large number of poor within its city walls. Amsterdam faced enormous difficulties in providing for the destitute, among whom were large numbers of Walloons. The cities were able to manage only by passing on costs to religious institutions.<sup>72</sup>

Although charity was widespread throughout the Republic, relief for the poor was not overly generous. Poorhouses and other relief for the poor invariably functioned under restrictions, such as requirements of church membership or several years' residence in the town. Unemployed and begging strangers were expelled from towns, or even from the province, as was the case in the province of Holland in 1589. Brass and tin workers coming from outside the province of Holland were refused admittance in 1608, 1622, 1623, and 1644. In Zeeland, it was even decided to return penniless Calvinist refugees to the Spanish-controlled territories. In addition, in almost all provinces, forced labour was practised in public workhouses, called *tuchthuizen*, *spinhuizen*, and *rasphuizen*, and on the town fortifications. Most orphanages boarded out (male) inmates over seven years

of age too. Punishment in the form of assignment to galleys or forced labour for one of the India Companies was rare, though.<sup>73</sup>

Dutch charity as a whole could not provide a reasonable living standard for the working class. Therefore, Joel Mokyr's allegation that the welfare system raised the wage level must be discarded. The sums spent on relief for the poor were simply too small, and they were partly paid in kind, such as in bread and turf. But Dutch charity certainly did see to it that the lower classes did not starve, as was stated by Jan Luiten van Zanden recently, in particular during the low season and periods of high unemployment.<sup>74</sup>

Regulation of food prices supplemented the local welfare system. In times of dearth, such as in 1571/1573, 1585/1587, 1596/1597, 1624, and 1630/1631, towns issued *keuren* and *ordonnanties* to maintain the living standard of the poor. Such regulations included fixing maximum prices, inspecting wares, obliging wealthy burghers to store provisions, distributing bread, and even seizing food provisions. Prohibitions were issued for the transit and export of foodstuffs, for the production of starch, beer, and brandy, and for the baking of white bread, rusks, and cake. Advance buying (before goods entered the market), which forced prices up, was sometimes banned. In general, food hoarding, monopolies, and speculation in trade were discouraged by local authorities as much as possible. Occasionally, such food-price regulations were even promulgated at the provincial level, such as in 1596 and 1630.<sup>75</sup>

Price policies existed for land too, for example when a city's boundaries were enlarged, to prevent speculation. Yet speculation was extremely difficult to combat, the more so as some magistrates profited from their own private businesses on the land market.<sup>76</sup> Towns had few regulations on house rents. Only rarely did they provide housing for the poor. However, rules as to the drafting of rental contracts did exist. Only written contracts came to be declared legal, first by town *keur* and after 1677 also by provincial law. Some cities also made provisions as to the terms of payment and the duties of tenants and landlords. Furthermore, many cities had a fixed day of removal, often the first of May.<sup>77</sup>

In addition to supervision of prices, cities pursued policies to prevent the spread of diseases, in particular the plague. They established *pesthuisen*, and caused the houses of the sick to be disinfected. Street gutters were cleaned and special *pestdoctoren* were appointed.<sup>78</sup> Although most of these regulations stemmed from local authorities, after the 1650s there was a trend towards centralization. The central government might have been motivated by fear that France, England, Scotland, Spain, and Portugal could refuse admittance of Dutch vessels to their harbours. Provincial health certificates were issued, declaring that goods came from plague-free regions. Moreover, provincial quarantines were imposed, whereas before, quarantines had been applied strictly locally. In 1664, far-reaching central measures were ordained by the States General concerning the exam-

ination and expulsion of sick travellers, and in 1679 was declared the first quarantine under the Republic.<sup>79</sup>

#### *8. The advantage of competition ?*

In all, Dutch authorities protected existing property rights and mercantile pursuits reasonably well in comparison with other countries. An indirect approach to economic policy was actively pursued, by organizing sufficient defence and by providing for the poor and the sick. Trade transactions benefited from favourable bank and bourse policies. Once the standard coin had stabilized, major devaluations belonged to the past. Government spending generated strong demand in the areas of provisioning troops, shipbuilding, and the building of fortifications, as well as in the public debt. As for direct actions, some measures were enacted at the central level, such as the granting of monopolies to the large merchant companies. Yet the level of government that had the most impact on economic conditions was the local level, through guild policies, settlement regulations, and trade monopolies. Few government bodies, though, could be said to be economic actors, although some wharves were erected with public funds.

Following David Landes, the Dutch economy benefited from the presence of powerful, urban-based mercantile communities and the overarching invitation to compete. Competition also arose out of self-preservation and was enhanced by intercity rivalry. The different religious sects had a drive for competition too. Brothers and sisters of the same denomination supported each other, such as was the case for the Portuguese Jews, who became one of the wealthiest groups in Amsterdam. In the Zaanstreek was another example, the Mennonites, who used their capital to the advantage of their sect through a cohesive brotherhood structure.<sup>80</sup>

Obviously, the loose federal system of the Dutch Republic provided cities and provincial governments with ample opportunities to promote their own interests in the national arena. The burghers, who were responsible for paying war taxes, gained an enormous say in the body politic. Autonomy was generally sufficient to allow for differing measures. A great diversity of economic activity was the result, generally under the rule of 'freedom for oneself and restriction to others'.

The province of Holland, above all, benefited from the loose federal system, which provided Holland with opportunities to consolidate its economic upsurge. As this wealthy and commercial province had the most to gain from a smoothly functioning and effective central government, its political leaders (like Oldenbarnevelt and De Witt) played a prominent role in national policy-making. Foreign policy was, of course, of great relevance to the mercantile interests of Holland. In this respect, the 'close economic collaboration of a network of maritime towns, inland manufacturing towns, fishing ports, and inland specialized agriculture', as

mentioned by Jonathan Israel,<sup>81</sup> was biased towards aiding the commercial policies of Holland. The power of the central state, albeit reduced, favoured peace and quiet for European trade (so important for Holland's ruling cliques), even though this conflicted frequently with the interests of industry (which benefited from high wartime tariffs on imports) and of colonial traders (who benefited during war from attacks on the possessions of other countries).

Not all sectors benefited from the Dutch federal system. It was disadvantageous for almost all rural production inland, and for internal trade, which was hampered so much by intercity rivalries. Like all central measures, nationwide stimulation and protection of trade was contingent on coalitions among cities, and between Holland and other provinces. And when discord ruled in Holland itself, the whole procedure of decision-making tended to drag on for months or even years. In the provincial assemblies and in the States General, the right of veto on matters concerning war and finance frequently blocked effective action in foreign politics. Notoriously bad was the financing of the navy throughout the period of the Republic. For years, Dutch convoys were powerless against the Dunkirk privateers, whereas rivers at the eastern borders failed to be deepened. Major missteps occurred too, such as the selling off of Dutch men-of-war after peace was signed in 1648, with the result that the Dutch navy had no chance against the English navy in the Anglo-Dutch War of 1652-1654.<sup>82</sup>

As long as Dutch wealth was based on expanding commerce, while other countries were in serious turmoil or experienced the adverse effects of the seventeenth century crisis, the federal system worked and the limited amount of protection proved sufficient. However, as foreign competition became more fierce, in particular after 1650-1670, the ad hoc measures were inadequate. As Jonathan Israel failed to deal with the Dutch state in less successful circumstances, his *Dutch Primacy of World Trade* speaks too positively of the influence of government authority during the Republic.<sup>83</sup> The development of economic forces on a nationwide scale was seriously hampered by the federal character of the Dutch state. In the end, the same complex of power relations that had stimulated competition also came to weaken the international economic position of the Dutch by the beginning of the eighteenth century.

## NOTES

- 1 D.S. Landes, *The unbound Prometheus: Technological change and industrial development in Western Europe from 1750 to the present* (Cambridge 1969) 20, 31. On the impact of cities upon state formation see also C. Tilly, *Coercion, capital, and European states, AD 990-1990* (Oxford 1990) 47-53, and W.P. Blockmans, 'Voracious states and obstructing cities; An aspect of state formation in preindustrial Europe', *Theory and Society* 18 (1989) 733-755.

- 2 R. Fruin, *Tien jaren uit den Tachtigjarigen Oorlog 1588-1598* (Den Haag 1899) 34; J. Huizinga, *Dutch civilisation in the seventeenth century and other essays* (London 1968) 152; J.L. Price, *Culture and society in the Dutch Republic during the seventeenth century* (London 1974) 16-17; M. Prak, 'Republiek en vorst; De stadhouders en het staatsvormingsproces in de Noordelijke Nederlanden, 16e-18e eeuw', *Amsterdams Sociologisch Tijdschrift* 16 (1989) 38.
- 3 J.I. Israel, *Dutch primacy in world trade, 1585-1740* (Oxford 1989) 94-5, 411.
- 4 H.L. Zwitzer, *De militia van den staat; Het leger van de Republiek der Verenigde Nederlanden* (Amsterdam 1991) 14, 62-63; M.C. 't Hart, *The making of a bourgeois state; War, politics and finance during the Dutch Revolt* (Manchester 1993) 34.
- 5 Based upon the annual petitions and consents of the provinces in the States General. M.C. 't Hart, 'Public finance 1550-1700', *A financial history of the Netherlands, 1550-1990* [forthcoming].
- 6 J.E. Elias, *De vlootbouw in Nederland in de eerste helft van de zeventiende eeuw 1596-1655* (Amsterdam 1933) 9, 33-3; J.R. Bruijn, 'Mercurius en Mars uiteen; De uitrusting van de oorlogsvloot in de zeventiende eeuw', S. Groenveld *et al.* (eds), *Bestuurders en geleerden* (Amsterdam 1985) 102; R.W. Unger, *Dutch shipbuilding before 1800; Ships and guilds* (Assen 1978) 64.
- 7 J.J. Roovers, *De plaatselijke belastingen en financiën in den loop der tijden* (Alphen aan den Rijn 1932) 30; A.C.M. Kappelhof, *De belastingheffing in de Meierij van Den Bosch gedurende de Generaliteitsperiode (1648-1730)* (Tilburg 1986) 288-300; Zwitzer, *De militia van den staat*, 22-23; R. Willemsen, *Enkhuizen tijdens de Republiek; Een economisch-historisch onderzoek naar stad en samenleving van de 16e tot de 19e eeuw* (Hilversum 1988) 30; E.R.M. Taverne, *In 't land van belofte: in de nieuwe stad; Ideaal en werkelijkheid van de stadsuitleg in de Republiek, 1580-1680* (Maarsse 1978) 53-59.
- 8 't Hart, *The making of a bourgeois state*, 196; J.R. Bruijn & J. Lucassen, *Op de schepen der Oost-Indische Compagnie* (Groningen 1980) 18; Zwitzer, *De militia van den staat*, 42-43, 61.
- 9 P.H. Engels, *De belastingen en de geldmiddelen van den aanvang der Republiek tot op heden* (Utrecht 1862) 71; Kappelhof, *De belastingheffing in de Meierij*, 79-126; H.E. Becht, *Statistische gegevens betreffende den handelsomzet van de Republiek der Verenigde Nederlanden gedurende de 17e eeuw (1579-1715)* (Den Haag 1908). The term Generality lands was conferred in 1648 to the regions in Brabant, Flanders, Overmaze, and Westerwolde that had been reconquered from the Spanish.
- 10 Zwitzer, *De militia van den staat*, 71.
- 11 Drenthe was the only constituent province that did not have the right to vote, as it was too poor to send a delegation. The generality lands (see previous footnote), however, located at the borders of the Republic, were ruled by the Council of State. As for the conquered territories overseas, these were ruled by the East and West India Companies.
- 12 The blockade of Antwerp could be extended by intensive patrolling of the Flemish coast, preventing smaller harbours from organizing the provisioning of Antwerp again. J.I. Israel, *The Dutch Republic and the Hispanic world 1606-1661* (Oxford 1986) 145-146; W.S. Unger, *Geschiedenis van Middelburg in omtrek* (Middelburg 1966) 43; J.H. Kernkamp, *De handel op den vijand 1572-1609* (Utrecht 1931) I: 83.

- A blockade was imposed on east Frisian harbours in the first decades of the Eighty Years' War too: *Ibidem*, 206.
- 13 W.D. Voorthuijsen, *De Republiek der Verenigde Nederlanden en het mercantilisme* (Den Haag 1965) 70-71.
  - 14 Israel, *The Dutch Republic*, 145-149, 218-221, 282.
  - 15 J.A. van Houtte, *An economic history of the Low Countries 800-1800* (London 1977) 203, 291; Voorthuijsen, *De Republiek*, 46, 73, 88.
  - 16 P.W. Klein, 'De Nederlandse handelspolitiek in de tijd van het mercantilisme: een nieuwe kijk op een oude kwestie?', *Tijdschrift voor Geschiedenis* 102 (1989) 206.
  - 17 Kernkamp, *De handel op den vijand*, 33, 115; Voorthuijsen, *De Republiek*, 31.
  - 18 See also the article by Thomas Lindblad in this volume. In fact, the duties of 1650s increased by an average of 22%. Additional duties could be imposed for tonnage and convoy, often for specific trade routes. In 1649, as a treaty with Denmark had replaced the Sound tolls by a lump sum, a tax on Baltic navigation was imposed. Van Houtte, *An economic history*, 291; Kernkamp, *De handel op den vijand*, 147-149.
  - 19 A. Bijl Mz, *De Nederlandse convooidienst; De maritieme bescherming van koopvaardij en zeevisserij tegen piraten en oorlogsgevaar in het verleden* (Den Haag 1951) 74; J.R. Bruijn, 'Scheepvaart in de Noordelijke Nederlanden 1580-1650', *Algemene geschiedenis der Nederlanden* (Haarlem 1980) VII: 140.
  - 20 J.L.F. Engelhard, *Het generaalplakkaat van 31 juli 1725 op de convoieën en licenten en het lastgeld op de schepen* (Assen 1970) 320-323.
  - 21 H.H. Rowen, *John de Witt, Grand Pensionary of Holland, 1625-1672* (Princeton 1978) 188-189; Israel, *The Dutch Republic*, 59, 89, 384, 432-434.
  - 22 H.E. van Gelder, *De Nederlandse munten* (Utrecht 1965) 76-80, 92-96.
  - 23 Van Gelder, *De Nederlandse munten*, 102; Van Houtte, *An economic history*, 215, 296.
  - 24 Van Houtte, *An economic history*, 215, 297-298, 301.
  - 25 Van Houtte, *An economic history*, 154, 201; Israel, *The Dutch Republic*, 6, 14, 29, 42; A. van Braam, *Bloei en verval van het economisch-sociale leven aan de Zaan in de 17de en 18de eeuw* (Wormerveer u.d.) 134; Voorthuijsen, *De Republiek*, 86.
  - 26 The States of Holland were composed of nineteen members, eighteen thereof from the major cities and one for the nobility. In Zeeland, six city votes stood against one vote for the nobles. In Utrecht, Gelderland, Overijssel, and Groningen the delegates of cities and noblemen held one another in balance, whereas in Friesland and Drenthe rural representatives were strongest. S.W. Verstegen, *Gegoede ingezetenen; Jonkers en geërfden op de Veluwe 1650-1830* (Zutphen 1989) 51; M.J.A.V. Kocken, *Van stads- en plattelandsbestuur naar gemeentebestuur* (Den Haag 1973) 51-52; M.C. 't Hart, 'Cities and statemaking in the Dutch Republic, 1580-1680', *Theory and Society* 18 (1989) 666-668.
  - 27 't Hart, *The making of a bourgeois state*, ch. 5.
  - 28 J. Jacobsen Jensen, 'Moryson's reis door en zijn karakteristiek van de Nederlanden', *Bijdragen en Mededeelingen van het Historisch Genootschap* 39 (1918) 267; C.D. van Strien, *British travellers in Holland during the Stuart period; Edward Browne and John Locke as tourists in the United Provinces* (Amsterdam 1989) 136-138; J.M.F. Fritschy, *De patriotten en de financiën van de Bataafse Republiek* (Amsterdam 1988) 52-54. In the Zaanstreek, several industries complained about the tax burden on grinding corn, starch, and peat. Van Braam, *Bloei en verval*, 135-136.

- 29 This development was based on the financial revolution in the sixteenth century. J.D. Tracy, *A financial revolution in the Habsburg Netherlands; Renten and renteniers in the county of Holland, 1515-1565* (Berkeley 1985) 3; E.H.M. Dormans, *Het tekort; Staatsschuld in de tijd der Republiek* (Amsterdam 1991) 26, 71; 't Hart, 'Cities and statemaking', 678.
- 30 The federal debt emerged in the 1590s and rose to over 16 million guilders in the 1660s. Dormans, *Het tekort*, 139-140.
- 31 M.C. 't Hart, 'Public loans and lenders in the seventeenth century Netherlands', *Economic and Social History in the Netherlands* 1 (1989), 133.
- 32 't Hart, *The making of a bourgeois state*, 143, notes a relatively lighter tax burden for country dwellers as compared to town dwellers. J. de Vries, *The Dutch rural economy in the Golden Age, 1500-1700* (New Haven/London 1974) 213.
- 33 De Vries, *The Dutch rural economy*, 197; Willemsen, *Enkhuizen*, 21; C. Postma, *Het hoogheemraadschap van Delfland in de middeleeuwen 1289-1589* (Hilversum 1989) 84; Kocken, *Van stads- en plattelandsbestuur*, 35-36; H. van der Linden, 'Les communautés rurales en Hollande de la fin de l'époque mérovingienne à la Révolution Française', *Les communautés rurales; Recueils de la Société Jean Bodin* 44 (1987) 481-482; H.S. Danner, 'Droogmakerijen in de zeventiende eeuw', E.H. Walhuis & M.H. Boetes (eds), *Strijd tegen het water; Het beheer van land en water in het Zuiderzeegebied* (Zutphen 1992) 53.
- 34 But no action was undertaken. J.W. Koopmans, *De Staten van Holland en de Opstand; De ontwikkeling van hun functies en organisatie in de periode 1544-1588* (Den Haag 1990), 165; Z.Y. van der Meer, *Het opkomen van den waterstaat als taak van het landsbestuur in de Republiek der Vereenigde Provinciën* (Delft n.d.) 65-68, 70, 79, 97.
- 35 Van der Meer, *Het opkomen van den waterstaat*, 152-153. Inland, in the provinces of Overijssel and Gelderland, little concern was shown for waterworks, as only the Quarter of Nijmegen had decided upon general dike regulations. Gelderland, however, did act occasionally in cases of flagrant neglect of dikes, such as in 1611 for the polder of Arkenheem. *Ibidem*, 139-140.
- 36 Van der Meer, *Het opkomen van den waterstaat*, 103-104, 113-115, 126; Van Houtte, *An economic history*, 142.
- 37 Postma, *Het hoogheemraadschap*, 342-343; Van der Meer, *Het opkomen van den waterstaat*, 92-96, 125-126, 147-148; Kocken, *Van stads- en plattelandsbestuur*, 27; A.J. Thurkow, 'De Friese en Hollandse droogmakerijen; Een vergelijking', E.H. Walhuis & M.H. Boetes (eds), *Strijd tegen het water; Het beheer van land en water in het Zuiderzeegebied* (Zutphen 1992) 66.
- 38 E.C.G. Brünner, *De order op de buitennering van 1531* (Utrecht 1918) 116 ff; Z.W. Sneller, 'De opkomst van de plattelandsnijverheid in de 17e en 18e eeuw', *Economisch-Historische Herdrukken* (Den Haag 1964) 117; L. Noordegraaf, 'Internal trade and internal trade conflicts in the Northern Netherlands; Autonomy, centralism, and state formation in the pre-industrial era', *Britain and the Netherlands* 10 (1992) 17.
- 39 The act of 1531 was revived by reprints during the seventeenth century and debated in the States of Holland. Brünner, *De order op de buitennering*, 196; Van Houtte, *An economic history*, 157; P.G. Bos, *Het Groningsche gild- en stapelrecht tot de*

- reductie in 1594* (Wolters, 1904) 366-367; N.W. Posthumus, *De neringen in de Republiek* (n.p. n.d.) 10; Voorthuijsen, *De Republiek*, 106.
- 40 The towns of Holland, perceiving the Zaan as a direct threat to their own industries, reacted by prohibiting inhabitants from having ships built or repaired outside the city walls. Unger, *Dutch shipbuilding*, 8, 84; Van Braam, *Bloei en verval*, 62; Sneller, 'De opkomst van de plattelandsnijverheid', 121-122; M.A. Verkade, *De opkomst van de Zaanstreek* (Utrecht 1952); C.A. de Feyter, *Industrial policy and shipbuilding; Changing economic structures in the Low Countries 1600-1980* (Utrecht 1982) 141.
- 41 Noordegraaf, 'Internal trade', 19.
- 42 J. de Vries, *Barges and capitalism; Passenger transportation in the Dutch economy (1632-1839)* (AAG Bijdragen 21 (1978)/Utrecht 1981) 51, 56, 61-62, 89, 129; J.M. Fuchs, *Beurt en wagenveren* (Den Haag 1946) 22, 30-32, 198; Postma, *Het hoogheemraadschap*, 290; J. Tersteeg, 'Een bijdrage tot de geschiedenis der binnenlandsche vaart', *Bijdragen voor Vaderlandsche Geschiedenis en Oudheidkunde* Vierde Reeks III-3 (1903) 162-184; Van der Meer, *Het opkomen van den waterstaat*, 16-18, 100, 170.
- 43 Van der Meer, *Het opkomen van den waterstaat*, 128, 130-133, 144, 148-149; G.P. van de Ven, *Aan de wieg van Rijkswaterstaat; Wordingsgeschiedenis van het Pannerdens kanaal* (Zutphen 1976) 28-29, 64.
- 44 Van de Ven, *Aan de wieg*, 336-356; Postma, *Het hoogheemraadschap*, 321; Van der Meer, *Het opkomen van den waterstaat*, 99, 149, 162.
- 45 Such patents could also be granted by the federal government, bearing upon the whole territory of the Republic, and occasionally by a city government. G. Doorman, *Octrooien voor uitvindingen in de Nederlanden uit de 16e-18e eeuw* (Den Haag 1940) 20, 32.
- 46 Voorthuijsen, *De Republiek*, 53-60, 76.
- 47 Voorthuijsen, *De Republiek*, 61, 73-74, 79, 88, 95.
- 48 Fruin, *Tien jaren*, 48; Kocken, *Van stads- en plattelandsbestuur*, 20-21.
- 49 J.C.N. Raadschelders, *Plaatselijke bestuurlijke ontwikkelingen 1600-1980; Een historisch-bestuurskundig onderzoek in vier Noord-Hollandse gemeenten* (Den Haag 1990) 76, 90-91; Willemsen, *Enkhuizen*, 30-34; W.B. Peteri, *Overheidsbemoeiingen met stedenbouw tot den vrede van Munster* (Alkmaar 1913) 42-44, 53-58, 68-71; E. Slot, *Vijf gulden eeuwen; Momenten uit 500 jaar gemeentefinanciën* (Amsterdam 1990) 66; Taverne, *In 't land van belofte*, 136.
- 50 Taverne, *In 't land van belofte*, 171; Raadschelders, *Plaatselijke bestuurlijke ontwikkelingen*, 87-88; R. de Vries, 'Crisis en sociale politiek in Enkhuizen, 1650-1850', *Barre Tijden; Crisis en sociale politiek rondom de Zuiderzee, 1650-1850* (Zutphen 1989) 47-48.
- 51 For example the *Commercie Compagnie* in Middelburg of 1643-1646; Unger, *Geschiedenis van Middelburg*, 51. As for manipulation of the appointment of officers, see 't Hart, *The making of a bourgeois state*, 206.
- 52 Van Houtte, *An economic history*, 217, 304; Slot, *Vijf gulden eeuwen*, 55, 59.
- 53 D.C. North, *Structure and change in economic history* (New York 1981) 153-154; V. Barbour, *Capitalism in Amsterdam in the seventeenth century* (Ann Arbor 1963) 44; G. Parker, 'The emergence of modern finance in Europe', C.M. Cipolla (ed.),

- The Fontana Economic History of Europe* (Hassocks 1977) II: 550; Unger, *Geschiedenis van Middelburg*, 49-50.
- 54 Fruin, *Tien jaren*, 41-42; Fuchs, *Beurt en wagenveren*, 20, 143 ff.
- 55 Posthumus, *De neringen*, 2-5, 15, 20; Unger, *Dutch shipbuilding*, 65-66; Barbour, *Capitalism in Amsterdam*, 71; I.H. van Eeghen, *De gilden; Theorie en praktijk* (Bussum 1965) 13-19; W. van Ravensteyn, *Onderzoekingen over de economische en sociale ontwikkelingen van Amsterdam gedurende de 16de en het eerste kwart der 17de eeuw* (Amsterdam 1906) 45-54; J.L. van Zanden, *Arbeid tijdens het handelskapitalisme; Opkomst en neergang van de Hollandse economie 1350-1850* (Bergen 1991) 147; H.P.H. Nusteling, *Welvaart en werkgelegenheid in Amsterdam 1540-1860; Een relaas over demografie, economie en sociale politiek van een wereldstad* (Amsterdam 1985) 149-150.
- 56 Locations were assigned also because of the danger of fire: wharves were storehouses for quantities of wood, whereas fire was used for preparing timber, and pitch and tar were melted for caulking. Unger, *Dutch shipbuilding*, 64-65, 115; De Feyter, *Industrial policy*, 146.
- 57 De Feyter, *Industrial policy*, 144; C. Wiskerke, *De afschaffing der gilden in Nederland* (Amsterdam 1938) 80-81, 84, 88; Bos, *Het Groningsche gild- en stapelrecht*, 101, 367; Van Ravensteyn, *Onderzoekingen*, 162-165.
- 58 A.Th. van Deursen, *Het kopergeld van de Gouden Eeuw* (Assen 1981) I: 21; J.G. van Dillen, *Van rijkdom en regenten; Handboek tot de economische en sociale geschiedenis van Nederland tijdens de Republiek* (Den Haag 1970) 176, 197; Doorman, *Octrooien*, 56-57.
- 59 The States of Holland were generally modest in handling guild disputes, referring requests back to the home town of the claimant. Van Houtte, *An economic history*, 164; Doorman, *Octrooien*, 12; Wiskerke, *De afschaffing der gilden*, 54, 57-58.
- 60 Nusteling, *Welvaart en werkgelegenheid*, 144-147.
- 61 J.G.C.A. Briels, *Zuidnederlanders in de Republiek 1572-1630; Een demografische en cultuurhistorische studie* (Sint Niklaas 1985) 213; J. Lucassen & R. Penninx, *Nieuwkomers; Immigranten en hun nakomelingen in Nederland 1550-1985* (Amsterdam 1985) 32-34.
- 62 L. Noordegraaf, '... een herberghe voor alle verjaeghde ende verdreven lieden ...; Haarlem als toevluchtsoord voor Zuid-Nederlanders omstreeks 1600', *Antwerpen-Haarlem* (Haarlem 1990) 4-5; Van Houtte, *An economic history*, 163; Willemsen, *Enkhuizen*, 33; H. Bots, G.H.M. Posthumus Meyjes & F. Wieringa (eds), *Vlucht naar de vrijheid; De hugenoten en de Nederlanden* (Amsterdam 1985) 70, 73-74; Briels, *Zuidnederlanders*, 127, 132; Van Houtte, *An economic history*, 159.
- 63 Van Houtte, *An economic history*, 287; Bots (ed.), *Vlucht naar de vrijheid*, 70, 73-74.
- 64 Voorthuijsen, *De Republiek*, 88; Briels, *Zuidnederlanders*, 145.
- 65 L. Noordegraaf, *Hollands welvaren? Levensstandaard in Holland 1450-1650* (Bergen 1985) 172; J. Lucassen, *Naar de kusten van de Noordzee; Trekarbeid in Europees perspectief, 1600-1900* (Gouda 1984) 171; Van Zanden, *Arbeid*, 74, 169.
- 66 Briels, *Zuidnederlanders*, 137; Noordegraaf, '... een herberghe', 5; Peteri, *Overheidsbemoeiingen*, 45.
- 67 Nusteling, *Welvaart en werkgelegenheid*, 144-147; Van Houtte, *An economic history*, 160; Van Zanden, *Arbeid*, 62; Van Deursen, *Het kopergeld*, I: 57-58.
- 68 Van Eeghen, *De gilden*, 12.

- 69 Raadschelders, *Plaatselijke bestuurlijke ontwikkelingen*, 60; Kocken, *Van stads- en plattelandsbestuur*, 22; Roovers, *De plaatselijke belastingen*, 8, 24; H.J. Koenen, *Voorlezingen over de geschiedenis der finantien van Amsterdam* (Amsterdam 1885) 130-131; Slot, *Vijf gulden eeuwen*, 81.
- 70 Van Strien, *British travellers in Holland*, 143.
- 71 De Vries, *The Dutch rural economy*, 210-211; see also A.J. Mensema & A.J. Gevers, 'De Staten als souverainen van Overijssel 1578-1795', *In Alle Staten* (Zwolle 1978) 49; Taverne, *In 't land van belofte*, 179.
- 72 Nusteling, *Welvaart en werkgelegenheid*, 152-153, 161, 165; Unger, *Geschiedenis van Middelburg*, 54; Van Deursen, *Het kopergeld*, I: 20. Pensions out of the central budget were used mainly to pay army officers who were temporarily out of service. Few widows of sailors and soldiers received a pension at all, often just for a couple of months, and then only strictly for those who had claims as to arrears in payment. Wounded and disabled soldiers could eventually receive a small sum too, such as twelve or eighteen guilders for the loss of an arm or a leg. *Ibidem*, 48-49; Zwitzer, *De militie van den staat*, 99.
- 73 D. Damsma, 'De sociaal-politieke ontwikkelingen in Nederland in comparatief perspectief', *Barre tijden; Crisis en sociale politiek rondom de Zuiderzee, 1650-1850* (Zutphen 1989) 25, 31; Nusteling, *Welvaart en werkgelegenheid*, 144, 161, 170; Van Houtte, *An economic history*, 160, 287, 290; Van Deursen, *Het kopergeld*, I: 80-84; Raadschelders, *Plaatselijke bestuurlijke ontwikkelingen*, 80; Briels, *Zuid-nederlanders*, 117; Kocken, *Van stads- en plattelandsbestuur*, 23.
- 74 J. Mokyr, *Industrialization in the Low Countries, 1795-1850* (New Haven 1976) 197; Van Zanden, *Arbeid*, 172-173; see also J. de Vries, 'An inquiry into the behaviour of wages in the Dutch Republic and the Southern Netherlands, 1580-1800', *Acta Historiae Neerlandicae* 10 (1978) 91-92. Welfare policies became more restrictive, in particular after 1682. Nusteling, *Welvaart en werkgelegenheid*, 163-164, 168.
- 75 Not only corn was bought in advance – butter, livestock, and meat suffered from these practices too. Magistrates could also request church authorities to increase their generosity, and ask for prayer-meetings and processions. L. Noordegraaf, 'Dearth, plague and trade; Economy and politics in the Northern Netherlands, fifteenth to nineteenth centuries', *Economic and Social History in the Netherlands* 1 (1989) 51; R. de Vries, 'Crisis en sociale politiek', 48.
- 76 Willemsen, *Enkhuizen*, 30.
- 77 C.M. Lesger, *Huur en conjunctuur; De woningmarkt in Amsterdam, 1550-1850* (Amsterdam 1986) 23-28, 31. For rare examples of housing for the poor, see: Van Deursen, *Het kopergeld*, III: 50; Taverne, *In 't land van belofte*, 185.
- 78 Noordegraaf, 'Dearth, plague, and trade', 56.
- 79 Noordegraaf, 'Dearth, plague and trade', 58-59.
- 80 Van Braam, *Bloei en verval*, 56-58.
- 81 Israel, *Dutch primacy*, 415.
- 82 't Hart, *The making of a bourgeois state*, 59.
- 83 Israel, *Dutch primacy*, 16-17, 37, 95, 188-189, 269, 411-415. The same author gives a less rosy view of the Dutch state in his excellent article 'The Holland towns and the Dutch-Spanish conflict, 1621-1648', *Bijdragen en Mededelingen betreffende de*

*Geschiedenis der Nederlanden* 94 (1979) 41-69. See also Klein, 'De Nederlandse handelspolitiek', 206.

## VII

### DUTCH INDUSTRY IN THE GOLDEN AGE\*

by

*Leo Noordegraaf*

The only difficulty is that the industrial history of the Dutch Republic is still largely terra incognita. (*De moeilijkheid is alleen dat de industriële geschiedenis van de Republiek nog goeddeels terra incognita is.* – P.W. Klein in: *de Volkskrant*, 15 February 1992).

#### *1. Introduction*

The Dutch Republic, and the Holland region in particular, expanded after 1580 into one of the major industrial centres of Europe. Within a period of decades, a large number of companies whose impact often reached far beyond the local and regional markets settled into a relatively small area. In part that impact is reflected in the increasing differentiation and specialization within the sector into numerous branches and businesses. A variety of qualitative and quantitative changes indicate the importance and scope of industrial activities. These developments include the processes of diversification and concentration, technological advancement and rationalization, an increasing energy consumption and productivity.

This industrial growth must of course be viewed in the light of its economic consequences. Generally speaking, economic developments can be considered to have been positive until the second half of the seventeenth century. Production, sales and profits increased to new heights. Elsewhere in this collection of articles, J.L. Van Zanden analyses industrial performance in terms of (quantitative) growth. Here the institutional and organizational framework within which that growth took place is described. The social-economic relationships between the parties involved in the production process will, of course, also be discussed.<sup>1</sup> In order to better explain the scope and the speed of the process of growth, the medieval roots of the institutional and organizational relationships will be traced

where possible. The basic assumption hidden herein is that if the effect of the medieval inheritance is discounted, the rise of the Dutch Republic and Holland's advantage in the seventeenth century lose some of their enigma. This article ends with the 1660s, when industrial activities probably - much is as yet uncertain - reached their highest pre-industrial level.

## *2. Good times, bad times*

Unlike the situation seen after 1580, the period prior to then can hardly be characterized as a period in which unambiguously positive developments in industrial activity took place. Even prior to 1580 the sector's profile was differentiated and its scope was large in comparison to numerous areas elsewhere in Europe, but starting in the early sixteenth century various sectors found themselves in a downward spiral. In particular, companies which were relatively more large-scale and which usually manufactured for export, such as textiles and beer brewing, were experiencing an economic recession. Disappointing sales as a result of foreign competition, rising costs for raw materials and protectionist policies in the export areas had a negative effect on profits. Unemployment was rapidly spreading. On the other hand, differences on the local level were sometimes significant<sup>2</sup>, and other sectors managed to keep afloat or even experienced a period of modest growth, such as was probably the case in the shipbuilding sector. All in all, pre-1580 economic developments were varied.

After 1580 the situation changed drastically. As the Republic's economy flourished, the entire industrial sector shared in its growth, in sharp contrast to the preceding period.<sup>3</sup> The rapid growth in population resulting from both natural increase and immigration was reflected in a sharp increase in the demand for goods and services from this sector. Increasing sales of goods outside the Republic had an equally stimulating effect on industrial activity. Moreover, specialization, intensification and differentiation presented opportunities for further growth in agriculture, fishing, trade and shipping. In terms of both services and management, the subsequent division of labour resulted in the development of a large-scale, independent and varied secondary sector.

## *3. The working population*

Sadly, no national or regional statistics are available concerning the development of the working population per sector and branch for the seventeenth century. However, data from the sporadically recorded censuses and professions, as listed in the registry of marriages and migration records in particular, on the local and

regional level indicate that the increase in population was accompanied by a parallel absolute increase of the working population in the industrial sector.<sup>4</sup>

Relatively speaking, industrial activity in terms of job opportunities was so great that the division of the working population in the various sectors in some parts of the Republic, with the cities in Holland leading, strongly indicates relationships which can be considered characteristic of industrialized societies. In some inland towns industrial activity provided for the largest share of the available jobs. The first example in this respect which comes to mind is Leiden, where the presence of the dominant textiles industry clearly justifies the characterization 'industrial city'.<sup>5</sup> But in cities such as Haarlem, with its large-scale linen activities, and Delft, where the production of beer and porcelain were important industrial activities, the secondary sector also played a major role in the over-all economy. Even though the port cities with their extensive trade and transport sectors had relatively fewer producers, the share of industrial activities in the economy was significant there, too.

With the increase of international trade traffic involving the Dutch Republic and the central role which the Holland staple market played in the global economy, numerous raw materials which were not available in this country flowed in increasingly larger quantities into the port cities, where they were processed by industry before being passed on to destinations both inside and outside of the Netherlands. Numerous new branches - sugar refining, silk processing, glass blowing, gunpowder production, Delftware production, to name a few - kept many hands busy.

#### *4. Geography and economy*

In the above, a certain indication of where the geographical emphasis in the Northern Netherlands industrial activities can be found has already been given: in the Holland region, which played an increasingly dominant role starting in the second half of the fifteenth century, and specifically in the cities. The character of towns in the hinterland was often determined by one or more branches of the industrial sector, and the distribution of relatively expensive raw materials was of importance in the ports. However, one would do well to apply such generalizations with the utmost of care, as illustrated in the following examples. In the city of Utrecht (in the region bearing the same name), some three-quarters of the working population in the seventeenth century were actively involved in industrial activities. Inland cities in Holland, such as Gouda and Alkmaar, were not characterized by the overwhelming importance of a single branch, such as textiles in Leiden. The production of luxury goods was not limited to Amsterdam, which was the most important port city. After 1580, Haarlem was also home to many companies which made high-quality, expensive goods.

Although a majority were situated in the cities, industrial activities were not foreign to rural parts of the Republic. This is particularly true for the coastal area, where, more so than in the sandy regions to the east, a highly productive and strongly commercialized agricultural sector - as a result of the division of labour as already mentioned - made it possible for the services industry to blossom and grow. The origins of this industry may perhaps be found as early as the fourteenth century.<sup>6</sup>

Besides the small enterprises working for the immediate environment, in the seventeenth century in particular industrial activities on a larger scale in rural areas evolved which catered to the needs of markets further away. In the area directly north of Amsterdam in particular - known as the Zaan area - companies whose products were sold outside the region flourished.<sup>7</sup>

A logical result of the availability of raw materials was that some of the industrial activities - to a greater or lesser extent - necessarily took place in rural areas. Examples in this respect are brickworks, lime kilns and peat cutting.<sup>8</sup> The availability of running water in the area known as the Veluwe in the Gelderland region was instrumental in the establishment of paper and copper mills there.<sup>9</sup> Some enterprises were shunned from towns due to pollution of the water or air: an illustrative example is the oil milling industry.<sup>10</sup> In other cases, city-based entrepreneurs elected to locate their enterprises in a rural area. A variety of factors played simultaneous roles: lower wages and taxes (and therefore cost of living), the absence of institutional obstacles (such as regulations laid down by guilds), and the available wind for optimal application of industrial-purpose windmills, clear water and fields for bleaching, peat for fuel, or excellent shipping routes via waterways. The availability of part-time workers during seasons when the farms needed fewer hands was sometimes an important factor. Lack of space in urban areas also played a role in opting for a rural industrial location. A shortage of available workers in the cities may also have been a decisive factor. In the textiles industry in particular, the very nature of agricultural activities (irrespective of the relatively lower wages) made it possible to hire rural inhabitants, particularly for elementary processes such as spinning and combing.<sup>12</sup>

Typical for industrial activities, especially in the coastal regions, was the wide diversity of branches and businesses, characteristic of the seventeenth century in particular. After 1580, numerous new businesses flourished next to the small enterprises which traditionally sold their wares on the local market and the branches of industry which were traditionally export-oriented such as textiles and beer brewing. These new businesses made use of raw materials which had not been used prior to then and which were sometimes imported, and of newly-developed, advanced techniques and means of production, resulting in a highly-diversified new look for industrial activities.

The increasingly-wide diversity of industrial activities is not only evident in the broad range of branches and products. Striking differences in the size of the enterprise, the scope of the invested capital, the type of enterprise, organizational structure, productivity, degree of education and quality of entrepreneurship also indicate the presence of a widely-varied, highly-diversified secondary sector, for the period after 1580 in particular. Other indicators of diversification are the extent to which trade capital and capital for industrial activities were entwined, and market orientation and sales markets. The heterogeneous nature of the labour market also indicates a complicated industrial-activity structure. These indicators can be used not only to characterise the differences between the branches: when applied within one and the same branch of industrial activity, they bring a broad differentiation to light, as will be explained below.

### *5. Crafts and guilds*

The oldest type of enterprise known to develop was that of traditional crafts<sup>12</sup>: small enterprises in which a master craftsman and one or more journeymen and apprentices processed raw materials or carried out maintenance or repair activities. Only a modest initial investment was required. With just a few exceptions, such as grain mills<sup>13</sup>, only hand tools were used. Division of labour was only marginally seen. The owner usually worked alongside his helpers. Sales primarily took place on the local market or in the craftsman's own store and usually on order. In the latter case, the raw materials required were purchased at the expense of the principal, as a result of which (as is also the case for the means of production) almost no requirements were placed on the proprietor's financial strength. The fact that helpers were responsible for their own tools further reduced the need for capital.

Technology, which was virtually undeveloped, the marginal division of labour, and the limited scope of the enterprises soon restricted productivity. An institutional factor also played a role in this respect: the master craftsmen were forced to abide by regulations which were often laid down by a guild organization and tolerated by the civil authorities. The objective of this regulation was to limit competition within the profession, which resulted in limitations on the scope of the enterprises. Acquisition of raw materials, for example, was sometimes subject to maximums, and use of labour-saving devices was restricted. Only a modest number of apprentices and journeymen were allowed in order to ensure that economic and social status did not vary too much between the various producers. In short, small-scale enterprising was prescribed, and expansion, increasing productivity and creative business management according to one's own insights were all difficult to achieve. During the pre-industrial period, most businesses reflected this traditional craftsman structure, albeit that the extent to which

regulations were laid down varied depending on the time and place, and proprietors were free to determine their own policies within certain limits. This traditional craftsman structure was even abandoned in a number of branches, and when industrial activities in the seventeenth century in particular started manufacturing new products, an entirely different type of operation developed.

### 6. *Businesses on the move*

De-equalization tendencies can be seen as early as the middle ages and in the sixteenth century. In a variety of industrial sectors, such as shipbuilding and beer brewing, limitations on the number of helpers were eased or removed altogether. Thus not only did social-hierarchical relationships become more pronounced, but the way to large-scale industrial activity was opened. As a result, wider possibilities for the division of labour were made available to entrepreneurs. When, as a result of the broadening scope of a business, product specializations and expansion of the product assortment and/or production processes became more extensive and complicated, the division of labour inherently represented a labour-organization structure which encompassed multiple levels. Division of tasks according to training, skills, age and gender also resulted in differentiated remuneration and accentuated social and economic differences.<sup>14</sup> This is, of course, a description of the culmination of a process which took place over a number of centuries, unmistakably originating in the middle ages. An illustrative example of the division of tasks in the highest echelon of an enterprise is a beer brewery in Delft in about 1550. In the largest breweries, the brewer-owner limited his activities to acquisition and sales while a journeyman took responsibility for actual production. Very early in its existence this branch of industrial activity was an excellent example of business expansion by means of diversification. In addition to brewing, the larger brewers had their workers make their own barrels (instead of purchasing them from coopers), and milled their own grain.<sup>15</sup>

Of course large-scale industrial activities developed from hand-crafting via transitional and intermediate forms. In areas where the scope of production per business was limited by guilds - beer brewing in Haarlem in the fifteenth century, for example - some brewers tried to get other small businesses to work for them by entering into certain contracts. In Delft, too, small brewers produced for colleagues with more financial strength: *op souldij*, which means producing for wages in one's own small enterprise with one's own means of production while the raw materials are purchased at the expense of a big brother.

Incidentally, these examples indicate that economic and social differentiation took place not only *within* a business, between the proprietor and the personnel. The differences between proprietors themselves became more pronounced as traditional restrictions were relaxed.

An example of disintegration of the traditional craftsman structure and the evolution of large-scale types of business and organizational structures can be seen in the textiles industry in general and in the production of *laken* (fine cloth) in particular. As early as the second half of the fourteenth century, a putting-out system is seen in which the draper had the various people involved in processing the wool (such as weavers, fullers, dyers and numerous others) working for him.<sup>16</sup>

The evolution of the putting-out system was facilitated by the special nature of textiles production. The large number of partial processes which the raw material had to pass through meant that extensive labour specialization was seen virtually from the beginning.

Initially, a variety of limitations were applicable, restricting unlimited growth of the enterprise and production, but this does not alter the fact that the putting-out system's organizational structure resulted in inequality between drapers and those working for them, who, as a result, were no longer independent producers. Incidentally, the maximum production limits were so high that differences in economic and social status were also seen between the drapers themselves.

In the seventeenth century these trends became increasingly evident. The scope of the businesses increased in many branches of industry. The traditional craftsman structure continued to fade away in many branches. Division of labour and hierarchization characterized an increasingly large part of industrial activities. Even though the traditional craftsman-based businesses continued to represent a numerical majority, the economic importance of these businesses declined, in part due to the rapid growth of new types of enterprises which were not based on the traditional craftsman structure.

Restrictions concerning the number of personnel, means of production and output were eased or removed, and often even never applied in new branches. Egalitarian equalization objectives dominated business operations less than ever before. To an increasing extent, entrepreneurs were free to allocate production factors as they saw fit. The attempt to ban all competition originating in the middle ages faded more and more into the background. The sometimes highly-detailed regulations concerning production methods, pricing, and quality laid down by the government, guilds or related commercial organizations did restrict commercial freedom, but the trend towards *liberteit* (liberty) is unmistakably visible.<sup>17</sup>

One branch which soon reflected the factory system of the future was the shipbuilding industry. Wharfs with tens or hundreds of workers were commonplace. As the number of workers grew, division of labour and other types of rational, productivity-increasing organizational structures increased. At times, as many as 1,000 employees worked at the Dutch East India Company wharf in Amsterdam! More than 150 great ships for return shipping with Asia and 217 smaller ships were built there in the seventeenth century.<sup>18</sup> The size of the larger businesses is in part explained by the fact that the various suppliers, such as rope

yards, anchor forges and pulley makers, were integrated into the shipbuilding enterprise.

In the textiles industry as well, the seeds of large-scale, centralized production were present. Starting in the 1630s, financially strong entrepreneurs - known as *reders* - departed from the putting-out organizational system. They wanted as many partial processes as possible carried out in their own workshops. Fine-cloth workers (*lakenbereiders*) followed their example. Thus as a reaction to changes on the demand side - including changing fashions and a demand for better quality - scattered, de-centralized, small-scale businesses made way for an organizational system in which the successive partial processes leading up to the finished product were concentrated: manufacturing. The putting-out system, however, continued to dominate industrial activities and was free to flourish in new branches.<sup>19</sup> But the tone for the future had been set.<sup>20</sup>

It was in the larger enterprises in particular that the "industrialists" attempted to evade and breach production limits and other detailed regulations, with varying degrees of success. As far as the organizational structure was concerned, the economic and social distance between the managing owner or the master craftsman hired by him as production manager and the helpers working in the workshops for wages was even greater than in the putting-out system, which in itself was differentiated.

A situation in which business expansion, hierarchization, differentiation and commercial freedom were increasingly determinant for the future was characteristic of many of the new branches and specialist fields already referred to. The lack of tradition undoubtedly contributed to the fact that the equalizing regulations which were inherent to the traditional craftsman structure were not seen in these new branches. Guidelines laid down by the government concerning labour conditions, number of personnel, organizational structure, apprenticeship system, wages and prices, or pertaining to the quality and size of production or to competition and sales played a far-less important role in these branches.

Certainly, proprietors - sometimes sanctioned by the government - reached agreements amongst themselves with the intention of monopolizing the market or controlling quality, but limitations on the number of personnel or production based on an egalitarian view of society which was characteristic of the traditional craftsman structure had long since disappeared in large-scale businesses and new types of enterprises. To an increasing degree, dynamics, expansion, technological creativity and commercial instincts were able to flourish. Naturally, traditional organizational structures sometimes remained intact (such as the shipbuilding guilds<sup>21</sup>), but their function and methods were attuned to the demands of large-scale enterprise and "modern" entrepreneurs. In short, it can certainly not be said that enterprisers in the seventeenth century enjoyed absolute freedom, but they were able to set their own course to a greater extent than ever before.

### 7. *Tension and conflict*

Attempts to increase commercial freedom and ease regulation often led to tension and a variety of conflicts. Master craftsmen who had no means of expanding their small businesses and level of production defended themselves against trends towards de-equalization and were far from pleased with relaxation of the traditional craftsman organizational structure and guild regime.<sup>22</sup>

At the end of the sixteenth century, an attempt was made to keep contractors from the construction industry in Amsterdam. Regulations were made more stringent; fines were increased. The concentration of carpenters, bricklayers and other construction workers, however, proved to be difficult to stop.<sup>23</sup> Similar reactions were seen in a wide variety of traditional crafts: limitations on commercial freedom, resistance to commercial expansion, concentration and diversification. The establishment of a number of new guilds can also be interpreted as an attempt to turn the tide.<sup>24</sup>

In cases where the authorities gave in to the resisting master craftsmen by tightening and expanding protective, restrictive guidelines, this could be considered making concessions, but these concessions were primarily concessions to the sectors working on order and/or solely for the local market, or for branches not yet infiltrated by trade capital to any significant degree.<sup>25</sup> But the repeated announcement of stipulations and violations of the rules indicate that even then, despite the emphasis placed on the profile of the small-scale business sector, the erosion of the traditional craftsman structure was a topic of continued concern and that sometimes successful measures were immediately undermined.

To an increasing degree, the scales were tipping in the other direction. It proved to be impossible to maintain production restrictions and extensive regulation in the beer-brewing industry in Delft around 1550.<sup>26</sup> Unsuccessful attempts were made to limit the growth of large-scale businesses. The dependency of the small-scale businesses working for wages was a fact of life. Despite the resistance of small-scale entrepreneurs, expansion of the number of helpers and shearers in fine cloth production in Leiden could not be stopped. Workshops came to exist where tens of dozens of helpers were employed. An attempt to limit the size of pressing houses was short-lived.<sup>27</sup>

Seen from a perspective in which growing commercial freedom would prove to conquer the future, the tension between drapers and *reders* is particularly illustrative. Just as the putting-out system designed by the drapers succeeded in breaking through numerous traditional limitations despite continued regulation, the commercial policy of the financially-powerful *reders* can be viewed as an unambiguous attempt to continue along the path of deregulation and commercial freedom. The drapers felt threatened and resisted with all their might, and not without success. Despite the trend towards disintegration, the putting-out system continued to set the tone in the textiles industry.<sup>28</sup>

But the erosion and undermining of restrictive types of businesses and labour organizational structures is not only indicated by conflicts among the entrepreneurs themselves. The tension between master craftsmen and their helpers also illustrates the attempts which were made to break loose from the traditional craftsman pattern. One example is the ungranted request submitted by delftware potters' helpers in Rotterdam around 1640, asking that the patrons take on no more than one apprentice every two years. This was a reaction to the guild's decision to allow master craftsmen to take on as many helpers as they wanted and to put five young apprentices to work painting.<sup>29</sup> With this example I am alluding to a type of conflict which will be discussed below, in which not only the results of deregulation were threatened, but also the job market situation, working conditions and wage levels; in short: a clash between "capital" and "labour".

It can be concluded that industrial activities underwent certain identifiable changes starting in the middle ages. Traditional crafts and guilds in a variety of sectors were crowded out by the putting-out system, workshops and large-scale businesses. The growing social distance between the producers, extensive division of labour and various forms of deregulation and de-equalization foreshadowed the future. Although businesses with traditional craftsman structures continued to be in the majority numerically, and defensive reactions from this sector resulted in tightened regulation and the expansion or establishment of new guilds, the face of industrial activities was being determined to an increasing degree by the changes. The fact that most of the new enterprises and specializations to see the light of day, after 1580 in particular as a result of spin-offs from international trade, did not have a traditional-craftsman structure can be said to have determined the image of industrial activity in the Golden Age. I will now discuss "capital" and "labour" in detail in an attempt to bring that image into sharper focus.

### *8. Capital*

Parallel to the business typology described above, a distinction can be made between types of entrepreneurs: the master craftsman, the home industrial, the owner of middle-sized and large enterprises such as various workshops, wharfs and peat-cutting businesses.<sup>30</sup> The capital required for setting up and running these enterprises varied considerably. The master craftsman needed little or no capital. His helpers had their own tools. If work was done on order, the raw materials and semi-finished products were purchased at the principal's expense. Although the differences in income and wealth of the masters within a given craft were relatively small - in accordance with the effort to keep social-economic differences at a minimum - the need for capital varied considerably from one traditional craft to

another. Investments in capital goods such as boilers, presses, barrels, and ropes required more funds than simple hand-held tools.

The capital needed for a drapery was in itself relatively modest, although some financial reserves were necessary, both for the acquisition of quality wool and because of the low turnover of capital inherent to the complicated, time-consuming production and distribution processes. But those who wanted to employ more than a few weavers and other partial-processors needed to invest more. Initially, an attempt was made to prevent large differences in capital strength by imposing production maximums. Despite this fact, differentiation increased. For many were unable to fill their quota. The large draperies succeeded in making almost all the partial-processors dependent on them, but their weaker colleagues often missed the financial stamina needed to have fabrics finished - which is what lent fabrics their value - at their own expense. Sometimes, drapers with the financial strength to do so agreed to finance the means of production for some partial-processors - weaving looms in particular. This made it possible for them to reduce production costs, thus accentuating the differences between the larger and smaller drapers.

The fact that the capital strength of the various drapers varied significantly is a warning that we should not blindly assume that this profession almost by nature played a more important economic and social role than the master craftsmen who were dependent on the drapers. Dyers, dry-shearers and *apprêteurs* (who finished the fabric) in particular who used their own capital goods and raw materials succeeded in holding their own among the "leaders" in the putting-out system.

In places where the traditional craftsman structure was eroded or the putting-out system was crowded out by centralized production of high-grade fabrics in workshops<sup>31</sup>, increased capital strength was required from business owners. Commercial expansion required higher and higher investments in raw materials, capital goods and workers' wages; naturally not always in the same ratio.

It is striking that the new businesses and specializations which typified industrial activities in the Dutch Republic after 1580 were more capital-oriented than wage-oriented. This is particularly true for the businesses concentrated in port cities, where relatively expensive raw materials and ancillary materials were imported and primarily exported again after "refinement".<sup>32</sup>

But capital was sometimes also required for purposes other than wages in sectors where lower-grade goods were made. In the various types of windmills used for industrial purposes, wage expenses were relatively low. In the Zaan area - the rural district with the highest density of industrial windmills in the entire Republic - only five or six workers were needed to run an oil mill operating day and night.<sup>33</sup>

Energy consumption also claimed a relatively greater share of capital expenses. In addition to an absolute increase in part as a result of changes in production processes and application of new techniques, coal imported from Great Britain and Luik, which was relatively expensive, was being used more and more instead

of inexpensive inland peat. This was not only true for new branches. Existing businesses such as beer breweries were switching to coal more and more often.<sup>34</sup>

Moreover, entrepreneurs profited from rapid technological development. Albeit slightly delayed, inventions were also put to use in industrial activity.<sup>35</sup> Although the application of tools and techniques increased expenses, it resulted in increased production, improved quality and reduction of labour. In order to limit costs, investments were sometimes collective. In 1617, for example, twelve brewers in Amsterdam collectively equipped a horse-driven mill for grinding malt.<sup>36</sup>

Technological innovations requiring capital were seen in almost all sectors irrespective of whether they required more working capital or increased wage expenses. The productivity in the shipbuilding sector, for example, was greatly stimulated by the use of chains, a variety of windlasses, pulleys and dry docks.<sup>37</sup> In the textiles industry, the use of the ribbon mill invented in 1604 resulted in an enormous increase in production. Until then, the weaver could make only one ribbon at a time on his loom; the mill made twelve at once while almost completely mechanising the process.<sup>38</sup> A new method for the production of gilt leather introduced in 1628 resulted in a considerable increase in quality. The material known as Dutch gilt leather was soon an extremely popular product.<sup>39</sup> How labour-saving innovations were to result in far-reaching technological unemployment is seen in the example of the sawmill invented in the 1590s. Increased use of this invention took the bread out of the mouths of manual sawyers everywhere.<sup>40</sup>

Expanded production and standardization resulting from innovations were translated into a reduction of the production costs per unit for the entrepreneur despite the required investment. Moreover, when this reduction was expressed in consumer prices, production became more competitive and sales increased. The shipbuilding industry shows salient examples in this respect. But the opposite effect was also seen. In the luxury-goods industry in particular, the improved quality resulting from new technological applications sometimes resulted in significant price increases, and even when production costs increased, profits soared. Passchier Lammertijn, a damask worker early in the seventeenth century, received much more than his colleagues for the tablecloths and napkins made on his patented looms. Patents prevented colleagues from using his inventions, and their products were of an inferior quality.<sup>41</sup>

In addition to technical improvements and newly-invented tools, production methods and the like, the entire scope of industrial activities saw numerous product innovations. I will mention two. Shipbuilders gave Dutch East India Company ships double hulls in the first decade of the seventeenth century in order to protect them from piddocks and to limit damages.<sup>42</sup> In the canon-casting industry in about 1630, canons were made from a combination of copper, iron and lead whose calibre equalled that of the heaviest bronze pieces but which weighed only half as much.<sup>43</sup>

Finally we have the required investments in commercial buildings and sites, which formed the largest fixed-capital expenditure in the pre-industrial era. Depending on the size of the business, these expenditures were sometimes considerable. For the craftsman, his home with adjoining workshop was usually sufficient, and the putting-out system required only limited space, certainly when production and the number of machines and producers was restricted by maximums. Enterprises with centralized production and many workers had entirely different requirements. For the dozens of looms and sometimes more than one hundred workers (including many women and children) working in the various workshops of the textiles industry after about 1630, a modest home-workshop was, of course, much too small.<sup>44</sup> A specially-constructed building in Leeuwarden for the production of wool fabrics was 90 feet long and 30 feet wide, and is said to have had six storeys.<sup>45</sup> In terms of surface area and buildings, the wharfs and related suppliers for the Dutch East India Company in Amsterdam resembled a modern-day factory complex.<sup>46</sup> Naturally, capital became less mobile once investments had been made in real estate. This may be one of the reasons why when - in an attempt to limit wage costs - the textiles industry started moving from the towns in Holland to sandy rural areas after 1640, the putting-out system was moved earlier than the manufacturing activities.

Insofar as investments were involved, one must wonder to what extent the combination of wage costs with potential expansion of production, standardization and/or quality improvement influenced the introduction of advanced technology. Technological unemployment (sawing has already been mentioned, but this phenomenon was also seen in the textiles industry) would support the hypothesis that entrepreneurs took wage costs into consideration in their investment-related decisions. The fact that the wages in the Republic were high in comparison to elsewhere (resulting in a negative effect on the competitive position) and that interest rates in the Netherlands were low makes it an appealing hypothesis.

Little is known of actual investment behaviour. What was the relationship between internal and external capital in plans for starting or expanding commercial enterprises? Was there even a capital market open to industrial entrepreneurs? Did entrepreneurs want to be dependent upon that market?

In small-scale industry, and particularly when work was done on order and the raw materials were paid for by the principal, little capital was required. But in fields where the traditional-craftsman structure had been abandoned or which were traditionally characterized by a different type of business, things were different. In these fields, both fixed and current assets required considerable financial flexibility.

Internal financing by means of retaining profits was one possibility, but given the low profit margins, step-by-step expansion of this type (even when equalizing regulations had been reduced) could not have been easy. Whatever the case,

weavers in Leiden in the fifteenth century were able - upon their own strength, I believe - to work themselves up to drapers and modest tradesmen-entrepreneurs.<sup>47</sup>

In professions such as beer brewer and maritime carpenter where craftsmen succeeded in permeating the highest economic and social echelons in the middle ages, capital generated in the craftsman's own business will not have played a major role; initially more important were legacies, family fortunes, private loans, and later also commercial loans and shares.

Striking is the fact that widely-varying businesses were combined, making it possible to concentrate profits and/or capital. The great drapers of Leiden received some of their income in the fifteenth century from operating brickworks and lime kilns, and from selling peat and wine.<sup>48</sup> Shipbuilders in Haarlem around 1550 were also active wine tappers and merchants.<sup>49</sup> In Hoorn, in addition to his activities for the government, Pieter Teding van Berkhout was involved in operating a beer brewery, a gunpowder mill, and an inn, and in trading shares in the Dutch West India Company.<sup>50</sup>

In addition to entering into widely-varying professional and commercial combinations, entrepreneurs turned to integration and diversification, both from the top of the production line down and from the bottom up. As many partial processes as possible were concentrated in the workshops of the large textiles enterprises. Shipbuilders integrated suppliers into their businesses. Brewery and coopers, as already mentioned, were united in one company.

But getting back to investment trends: more information is available about the manner in which funds for industrial activities and trade capital became entwined. As characteristic of merchants' behaviour in the early-modern era as the combination is, spreading risks and the urge to speculate undoubtedly resulted in dissimilar investments. Jan Jansz Kaerel, who gathered a sizeable fortune in the dairy trade, also owned a glass-blowing company when he died in 1616.<sup>51</sup> Integration of related activities was probably more common. The earliest drapers were retailers in finished fabrics.<sup>52</sup> Lumber merchants invested on a large scale, for example, in ownership of wharfs and mills for sawing lumber.<sup>53</sup> Fine cloth merchants (*lakenkopers*) were active in dry-shearing.<sup>54</sup> Thus merchants from a variety of sectors also turned into entrepreneurs, often leaving actual production - as was seen at soap works<sup>55</sup> - to a master craftsman or the former owner from whom the enterprise had been purchased. In the peat-cutting industry, investors usually hired a (business) manager to bear responsibility for organizing the work.<sup>56</sup>

The merchant's actual involvement was, of course, even more limited when he acted only as financier or shareholder. Using this construction, it was also possible to share risks with others. These shareholder's conglomerates evolved more or less as a matter of course when heirs refused to sell their shares, but sometimes these *partenrederijen* or shared enterprises came into being because other family members, friends, neighbours or fellow church members got involved. Industrial mills like the oil mills used in the Zaan area were often financed in this way.<sup>57</sup> The

"shares" could be sold either in private or publicly, making it possible for outsiders to become involved in the business as well. Division into smaller "shares" often resulted in groups of dozens of owners.

Of course in cases where actual shares were involved, trade capital was not always the only capital invested. This is also true of loans and mortgages, for which funds originated with the same range of capitalists as was the case for shares.<sup>58</sup>

In addition to private capital, government funding also played a role in the financial support of industrial activities.<sup>59</sup> Various types of capital injections by government were seen. Towns offered the use of commercial buildings or contributed to housing-related expenditures. Costly capital goods such as cranes were also sometimes paid for by the authorities, and sometimes raw materials. But unregistered loans and mortgages were also extended. In the textiles industry in particular, commercial plans were often given the necessary financial backing in the interest of employment, in which cases not only interest-bearing but also interest-free loans were given. Supplying capital *à fonds perdu* was also not uncommon. Inventories were sometimes mortgaged on extremely friendly conditions at the municipality's expense.<sup>60</sup> Initiatives for the establishment or expansion of businesses were often launched by council members. To counter premiums offered by other municipalities, however, towns robbed of a respectable share of their productive inhabitants often responded with equally active and even aggressive economic policies.

Combined with the availability of risk-bearing capital and low interest rates, these credit facilities contributed to the development of industrial activities in the Golden Age, albeit that the enthusiasm of capitalists for investing in industrial activities (and trade) was not as great as that for investing in land or bonds due to the risk factor in pre-industrial society.

Especially for the many aliens who immigrated to the Republic with insufficient means of support, for motives either religious or economic, in the hope of practising their original profession, government aid was important. Think in this respect of those from the Southern Netherlands whose "new draperies" influenced the textiles industry in particular after 1580 and whose fine cloth and other expensive fabrics represented an enormous boost for the industry after 1630. Their technical and commercial expertise was sizeable. Combinations of a variety of raw materials and the application of various weaving techniques resulted in a wide assortment of products. Throughout the years, more than 150 types and sub-types were introduced on the market in Leiden. The immigrants introduced less-expensive production methods, were willing to implement organizational improvements and other innovations, and were quick to respond to demand from other countries. This is true to an even greater extent for the financially-powerful large-scale fine cloth manufacturers - primarily originating from the Walloon provinces of Belgium - who set the tone of the industry after 1630.<sup>61</sup>

It was not only in the textiles sector that a leading role was played by foreign immigrants. Some examples: book printing and cartography also profited from a strong input from the Southern Netherlands; the glass industry from the Italians; pipe manufacturing from the English.<sup>62</sup> The last word has not been said concerning the scope and influence of this immigration, but it is certain that the introduction of new products, specializations in new or - to a lesser extent - existing business sectors, and a variety of technical, organizational and commercial innovations were given a powerful boost with the arrival of the immigrants. The newcomers had the best opportunities in locations or sectors where less-stringent residency requirements were applicable. In areas where they introduced specializations which were as yet unknown, even fewer obstacles hindered their industrial activities. Of course they, too, partook in a fair share of the conflicts with the crafts and guilds which wanted to maintain traditional organizational structures, but these rearguard actions usually signalled the end of the conflict.

When emphasis is placed on the achievements of the immigrants, I do not mean to imply that the foreigners were different from the Dutch entrepreneurs in terms of their desire to innovate and their progressive approach. Certainly, as was already stated, a traditionalist mentality was prevalent in certain sectors. But in numerous others - shipbuilding, for example - the "established" entrepreneurs certainly measured up to the "outsiders" in terms of technical innovation, commercial attitude and know-how in methods and markets.<sup>63</sup>

It will now be clear that starting in the second half of the fourteenth century, entrepreneurs began to play a significant role in industrial activities next to the master craftsmen. The fact that their role differed from the one traditionally seen in small-scale trade was in part a result of their investment behaviour, commercial organization, social origin and mobility in the relationship with their employees. This brings us to the question of the consequences of the disintegration of the traditional commercial organizational structures on the labour factor.

### *9. Labour*

In the above, I mentioned the changing social relationships seen in sectors and businesses characterized by commercial expansion, increased production and division of labour. The disintegration of the traditional craftsman structure was accompanied by magnification of the social distance between masters and helpers. The opportunities for helpers to start for themselves diminished as they were required to pay more to be admitted to the guild and to complete a more difficult master's examination than the sons of established master craftsmen - who were sometimes not even required to produce a masterpiece.<sup>64</sup> When the organizational structure of production made division of labour possible, the training for all-round

craftsmen was limited. All in all, even in sectors where businesses remained small-scale or the trend towards large-scale production stagnated, hierarchical relationships of a permanent nature evolved.

Increasing social inequality typifies to an even greater extent the putting-out system in the textiles industry, where the large-scale drapers ended up owning the means of production, thus undermining the independence of weavers and other partial processors, and basically forcing the status of wage labourer upon them.

The loss of independence and reduction to the status of labourer is perhaps best illustrated by the developments seen in the sawmills. Sawyers saw their income steadily increase in the course of the sixteenth century as the demand for sawed lumber grew. Originally earning less than carpenters and masons, sawyers climbed to the ranks of the best-paid craftsmen during the last decades of the century. The arrival of the sawmill - little is coincidental in economic history - marked the end of this development. Unemployment, decreasing wages and loss of independence were often the consequences of this labour-saving innovation. The future belonged to the mill - often financed by trade capital - where the owner or master craftsman oversaw the work of wage labourers, who could not even come close to achieving the same social and economic status of the sawyers of days gone by.<sup>65</sup>

These changes were also emphatically expressed in the changing remuneration structure. The difference in wages between master craftsmen and skilled helpers was initially minimal. Other helpers earned less, but age, experience and other qualities primarily determined the difference, which in itself was minor, rather than ownership of the business and any profit made. The wages of the supervisor and the helpers were usually fixed in detail.

However, in the putting-out system and in (large-scale) industry which was not characterized by the traditional craftsman structure, the inequality in remuneration grew proportionately with the growth of the enterprise. But these were not the only areas where this was seen: in small-scale industry - which retained a variety of traditional-craftsman characteristics - profits were not equally shared. While in the past the principal usually left the level of the helpers' wages to the master craftsmen, the proprietor now put aside a share for himself. If the enterprise employed five to ten helpers, the proprietor soon saw his daily wages double, enabling him to make a variety of investments.<sup>66</sup>

As far as we can tell, these wage deductions were not seen in the traditional craftsman structure until the end of the sixteenth century, but profitability and the accumulation of capital were probably accepted phenomena in other organizational structures many centuries earlier. As the number of helpers increased, the entrepreneur's profits increased, partly as a result of other profit-generating activities such as additional charges for expenses financed by the principal such as materials and tools.<sup>67</sup>

In large-scale industry in particular a growing demand for unskilled labourers was seen: a need which was fulfilled in a variety of sectors - brickworks and the textiles industry, for example - primarily by women and children. While the guild regime foresaw in training independent professionals, after the end of the sixteenth century the labour most needed by industry was cheap labour.

A distinction can be made between a variety of groups in the available labour force which were not freely interchangeable and which could not be considered employable irrespective of time, location and position. In the late middle ages and early modern era, we see differentiated labour potential. A variety of factors, such as educational level, experience, gender, age, possession of tools, geographic origin and institutional limitations, accentuated - of course to a given extent due to combinations of these factors - the heterogeneity of the labour force to an increasing degree, resulting in a highly segmented labour market. The dividing lines on that market were often determined by tension (between burghers and non-burghers, for example, or aliens and autochthons).<sup>68</sup>

### *10. Capital and labour*

In order to sketch an accurate image of changes in the composition and function of the labour factor, let us return to the tensions caused by deregulation and de-equalization. The inequality caused by de-integration in small-scale industry resulted in conflicts which can be interpreted as clashes between "capital" and "labour", and which as such represent - forgive my use of a somewhat anachronistic term - class struggles of a sort.

As early as the second half of the fourteenth century, conflicts over wages between drapers and fullers in particular resulted in the most extreme cases in exoduses.<sup>69</sup> If tension could not be eased through discussions or other measures, the fullers left the municipality. Negotiations were then conducted from the new location. By leaving their home town, they removed themselves from the municipal judicial system, which considered the fullers to be in default and the demands of this troublesome group to be a threat to the social order and the existing political and economic structures. This type of conflict sometimes took a considerable amount of time to resolve. In 1478, negotiations involving fullers, helpers and master craftsmen from Leiden<sup>70</sup> who had moved to Gouda lasted no less than three months. Weavers also sometimes used the "exodus" strategy. More common, however, was the strike - and this is also true for other professions.

In city councils, where "capital" was always well-represented, either directly or indirectly, there was a strong desire to prohibit wage strikes, etc. Not only strikes in the literal sense, but even discussions and meetings concerning labour conditions were forbidden. The fact that "exoduses" and strikes started to take place

indicates that, despite prohibitory and penal clauses, the labourers often found a way to organize properly. Professional solidarity was sometimes even mandatory. During a strike in 1547, weavers in Leiden cried: "If anyone works they will be found and their work destroyed."<sup>71</sup>

The exodus appears to have been a typically medieval weapon. It was seen less and less after 1600. Municipal authorities clamped down on these actions and joined forces with the entrepreneurs.<sup>72</sup> As was already said, the strike gradually became the most effective weapon in the struggle for wages and other working conditions, such as drinking money, working hours and Sundays off. The dry-shearers were the most militant group, becoming the elite of the textiles manufacturers after 1580. The role played by the previously troublesome fullers ended with the introduction of the fulling mill. The fullers' ranks rapidly diminished after 1600 due to the technological unemployment resulting from this innovation. Confrontations between owners of the workshops which typified the dry-shearing industry (often fine cloth merchants who had succeeded in penetrating production with their trade capital) and their helpers resulted in harsh measures. The helpers regularly held meetings in which demands and tactics were discussed. Well-balanced cooperation which reached beyond municipal limits is seen in the strikes which broke out in various places simultaneously. Conflicts of interest were also regularly seen in other professional groups, where the strike was also used as a weapon.

As in earlier periods, professional solidarity was often mandatory and people willing to work were forced to join the campaigns. But cooperation among labourers never resulted in the establishment of permanent interest groups like today's labour unions. Repression from above was too extensive. Only collective health and funeral funds were tolerated.

While the organization of labour was being obstructed by any and all available means, entrepreneurs were given every freedom, often with extremely active support from the civil authorities. In addition to the guilds patronized by the officials, many sectors saw the birth of both local and regional employers' organizations with the explicit objective of preventing helpers from joining forces and campaigning for improved conditions.<sup>73</sup>

All in all, changes in the social-economic relationships between the various parties were the most visible in businesses and sectors where a relatively large number of labourers of varying quality were employed under a regime of extensive division of labour - for that time - with poor prospects for social improvement. Relationships in the putting-out system were more formal than in crafts, but the gap between the entrepreneur or master craftsman and the helpers in large workshops was even wider. Home workers were able to carry out their work in the manner they deemed suitable, retaining a certain degree of independence; in the workshops the helpers were constantly monitored, which also resulted in longer working hours. The absence of patriarchal relationships, the broadening

social distance, the increasingly-strict monitoring and related stimuli for increased production therefore created a climate in which labour conflicts rapidly escalated.

From the perspective of the total sum of industrial activities, the number and scope of the "exoduses", strikes and other explicit confrontations can probably be considered modest in comparison to the industrialization period. In the traditional crafts, the patriarchal attitude was dominant. The structure of the putting-out system inherently represented an extremely low-profile relationship between capital and labour, while the isolation of partial processors which was inherent to the organizational structure of this system prevented these workers from joining forces. There was as yet no fertile soil for the radical class awareness seen in the nineteenth century within large-scale industry and production.

### *11. Institutions and economic growth*

In this essay, I have attempted to sketch the institutional and organizational framework within which industrial activities developed in the Dutch Republic in the period from about 1580 until the 1660s. In order to place this period in its proper perspective, the descriptions given are often based on the Late Middle Ages. The background question was whether this vantage point can contribute to explaining the rapid, widespread economic growth in this sector during the Dutch Golden Age.

Using this perspective implicitly meant ignoring the demand side of development. Changes in the realm of demography, social stratification and mobility, income and wealth relationships, and consumer power were accepted as basic assumptions. In other words: fundamental factors which made expansion possible were consciously excluded from study (not in the last place due to a lack of sufficient detail studies).

At the same time, the relationships with other economic sectors which must have had an effect on the growth of industrial activity were not discussed. For example, intensification and specialization in inland farming not only stimulated the demand for industrial products, but also made it possible to produce crops such as flax, hemp and tobacco for industrial use. Equally obvious is the influence of trade on the supply of raw materials and shipment of industrial products.<sup>74</sup> The stimulating effect which the favourable economic development of trade had on the shipbuilding industry is also self-explanatory.

However, while recognising the importance of demand and the influence of other sectors on the growth of industrial activities as described above, focus was placed on the supply side in general and its institutional framework in particular. For a thorough understanding of the processes described here, I would once again point out that it would have been difficult to steer clear of a variety of organiza-

tional obstacles had the institutional changes seen before 1580 not taken place, and the resulting rapid and widespread growth which typifies the increase in industrial activities in the Dutch Golden Age would have been much more difficult to achieve. After the fourteenth century - a bit earlier here, a bit later there - a variety of limitations pertaining to the scope of the enterprise, the number of personnel, the division of labour, output, etc. were lifted, as a result of which industrial activities were able to develop relatively freely after 1600, aided by the lucky stars of a favourable economic climate. By placing total emphasis on the undermining of the traditional craftsman structure as it began in the late middle ages, the deterioration of the guild regime, and the relevant changes which took place in the relationship between capital and labour, I have attempted to point out that an institutional and organizational foundation had been laid by the end of the sixteenth century which can be considered to have been one of the driving forces behind the growth which took place. The medieval legacy characterized by concepts such as de-equalization and deregulation was also one of the primary factors contributing to the disappearance of patriarchal relationships and the development of creative, innovative entrepreneurship. These are also factors which helped expand the limits of economic growth during the seventeenth century. Naturally it would be taking things too far to claim that this legacy represents the primary cause of the striking developments which took place after 1580, but it can certainly be considered one of the prerequisites.

When viewed from this premise, the changes and innovations which took place in the seventeenth century seem even more pronounced. Innovative views concerning profession and enterprise gained support and made it possible to integrate immigrants, to apply labour-saving innovations and to expand competitive practice with almost no difficulties.

In short, on the one hand I see the direct influence exerted by changes on the demand side on the increase in production capacity, the creation of more large-scale types of businesses, new types of labour organizational structures, modernized financial possibilities, innovations, expansion of product lines, and quality improvement, but on the other hand I recognise a relationship which is exactly the opposite. The institutional and organizational innovations were prerequisites for increasing productivity. They also contributed to the creation of an attractive product which had its effects on demand.

### *12. Causa efficiens or conditio sine qua non?*

In order to refrain from forcing sixteenth-century industrial activity into the anachronistic mould of modern industrial capitalism, I would leave you with a few thoughts to place things in their proper perspective.

Part of the industrial sector resisted the institutional changes. Defensive reactions, sometimes supported by the government, were particularly successful in sectors oriented towards the local market. When traditional structures were departed from, the concept of commercial freedom cannot always be considered applicable in its literal definition. In many cases, authorities employed regulations, regulatory bodies or officials in their attempts to “direct” commerce.<sup>75</sup> Think in this respect of quality control in the textiles industry and wage regulations pertaining to a variety of secondary employment conditions in various sectors. It must also be remembered that “modern” entrepreneurs, as opportunistic as they were, also often collectively attempted to establish restrictive measures. This fact reminds us that the distinction between these entrepreneurs and the guild members is not as strict as it may seem.<sup>76</sup> But, in general, I might add that it is difficult to deny that the regulations laid down by the government or their own professional organizations binding non-traditional entrepreneurs were less stringent than those found in the traditional situation.

Moreover, in order to keep the situation in its proper perspective, I would remind readers that small-scale enterprise in the era of the Republic was dominant in terms of numbers. Based on available studies, it is difficult to determine what the relationship is between the influence of the traditional craftsman system and its contribution to economic growth and that of early capitalistic businesses. I may very well be overestimating the importance of the latter. However, considering the fact that even in sectors where the traditional craftsman structure and guilds continued to exist, “modern” influences were seen, the following conclusion remains valid: as early as in the late middle ages, industrial activity (in interaction with demand and the opportunities made available by other economic sectors) was in many ways able to develop freely, according to individual insights.<sup>77</sup> Thus at the end of the sixteenth century, an institutional and organizational foundation had already been laid for unprecedented economic growth, which developed rapidly and easily. In short, a foundation which I would not consider to be a *causa efficiens*, but which I do view as a *conditio sine qua non*.<sup>78</sup>

## NOTES

\* Translation: L.S. Granger.

- 1 Two revered traditions in Dutch economic historiography originating in the nineteenth century: the Historical School and historical materialism (see L. Noordegraaf, ‘Anders maar ook eender; Economische geschiedschrijving in Nederland 1922-1992’, M.M.G. Fase & I. Van der Zijpp (eds), *Samenleving en economie in de twintigste eeuw* (Leiden 1992) 505-521.
- 2 Unlike the situation in the Leiden fine-cloth industry, the textiles industry in and around Haarlem may have experienced extensive expansion (tentative results of a

- doctorate study being carried out by Herman Kaptein, Department of Economic and Social History, University of Amsterdam).
- 3 L. Noordegraaf, 'Nijverheid in de Noordelijke Nederlanden 1490-1580' and L. Noordegraaf, 'Nijverheid in de Noordelijke Nederlanden 1580-1650', *Algemene geschiedenis der Nederlanden*, (Haarlem 1979) VI: 12-26; VII: 66-85; P.C. Jansen, 'Nijverheid in de Noordelijke Nederlanden 1650-1780', *Algemene geschiedenis der Nederlanden* (Haarlem 1979) VIII: 102-123. These articles include extensive bibliographies of literature published before 1979.
  - 4 See, for example, S. Hart, 'Geschrift en getal; Onderzoek naar de samenstelling van de bevolking van Amsterdam in de 17e en 18e eeuw, op grond van gegevens over migratie, huwelijk, beroep en alfabetisme', S. Hart, *Geschrift en getal; Een keuze uit de demografisch-, economisch- en sociaal-historische studiën op grond van Amsterdamse en Zaanse archivalia* (Dordrecht 1979) 128-129.
  - 5 N.W. Posthumus, *De geschiedenis van de Leidsche lakenindustrie* (Den Haag 1939) III: ch. 1 and 7.
  - 6 J.L. van Zanden, *Arbeid tijdens het handelskapitalisme; Opkomst en neergang van de Hollandse economie, 1350-1850* (Bergen 1991) ch. 2.
  - 7 A.M. van der Woude, *Het Noorderkwartier; Een regionaal historisch onderzoek in de demografische en economische geschiedenis van westelijk Nederland van de late middeleeuwen tot het begin van de negentiende eeuw* (AAG Bijdragen 16 (1972)/Utrecht 1972) II: ch. 5 and 6.
  - 8 Respective references for these branches are: J. Hollestelle, 'De Nederlandse steenbakkerij in de zeventiende en achttiende eeuw', *Economisch- en Sociaal-Historisch Jaarboek* 44 (1982) 11-21; K.A.H.W. Leenders, *Verdwenen Venen* (n.p. 1989).
  - 9 R. Hardonk, *Koornmullenaers, pampiermaeckers en coperslaghers; Korte historie der waterradmolens van Apeldoorn, Beekbergen en Loenen* (Apeldoorn 1968).
  - 10 J.A. Faber, H.A. Diederiks & S. Hart, 'Urbanisering, industrialisering en milieuaantasting in Nederland in de periode van 1500 tot 1800', *AAG Bijdragen* 18 (1973) 251-271.
  - 11 K.P.J. Janse, 'De koptienden als bron voor de economische geschiedenis van het Gooi, 1500-1850', *Economisch- en Sociaal-Historisch Jaarboek* 55 (1992) 60-66.
  - 12 See note 3 and L. Noordegraaf, 'Betriebsformen und Arbeitsorganisation im Gewerbe der nördlichen Niederlande 1400-1800', K. Fritze *et al.* (eds), *Gewerbliche Produktion und Stadt-Land Beziehungen* (Weimar 1979; Hansische Studien IV) 54-64.
  - 13 J.P.A. Stroop, *Molenaarstermen en molengeschiedenis* (Arnhem 1979<sup>2</sup>).
  - 14 See note 64 et seq. below.
  - 15 J.J. Woltjer, 'Een Hollands stadsbestuur in het midden van de 16e eeuw; brouwers en bestuurders te Delft', D.E.H. de Boer & J.W. Marsilje (eds), *De Nederlanden in de late Middeleeuwen* (Utrecht 1987) 264-266.
  - 16 Recent studies on the old-style drapery and on the role played by female labour: A.J. Brandt, 'Crisis, beleid en differentiatie in de laat-middeleeuwse Leidse lakennijverheid', and E.M. Kloek, 'De arbeidsdeling naar sekse in de oude draperie', J.K.S. Moes & B.M.A. de Vries (eds), *Stof uit het Leidse verleden; Zeven eeuwen textielnijverheid* (Utrecht 1991) 53-56; 67-75; E.M. Kloek, *Wie hij zij, man of wijf; Vrouwengeschiedenis en de vroegmoderne tijd* (Hilversum 1990) 48-77; M.C. Howell, *Women, production and patriarchy in late medieval cities* (Chicago 1986).

- 17 See also B.M.A. de Vries, 'De Leidse textielnijverheid in de zeventiende en achttiende eeuw', J.K.S. Moes & B.M.A. de Vries, *Stof uit het Leidse verleden; Zeven eeuwen textielnijverheid* (Utrecht 1991) 82.
- 18 F.S. Gaastra, 'Arbeid op Oostenburg; Het personeel van de kamer Amsterdam van de Verenigde Oostindische Compagnie', *Van VOC tot Werkspoor; Het Amsterdamse industrieterrein Oostenburg* (Utrecht 1986) 67.
- 19 D.J. Henstra, 'Kantnijverheid te Leeuwarden in de 17de en 18de eeuw', *De Vrije Fries* 72 (1992) 76.
- 20 Th. van Tijn, 'Pieter de la Court. Zijn leven en zijn economische denkbeelden', *Tijdschrift voor Geschiedenis* 69 (1956) 312-315.
- 21 R.W. Unger, *Dutch shipbuilding before 1800; Ships and guilds* (Assen/Amsterdam 1978) 78 ff.
- 22 L. Noordegraaf, 'Tussen ambacht en manufactuur; Vroegkapitalistische productie- en klassenverhoudingen in de Alkmaarse textielnijverheid, 1500-1800', *Economisch en Sociaal-Historisch Jaarboek* 44 (1982) 127.
- 23 H.P.H. Nusteling, *Welvaart en werkgelegenheid in Amsterdam 1540-1860; Een relaas over demografie, economie en sociale politiek van een wereldstad* (Amsterdam/Diemen 1985) 150.
- 24 W. van Ravesteyn Jr., *Onderzoekingen over de economische en sociale ontwikkeling van Amsterdam gedurende de 16e en het eerste kwart der 17e eeuw* (Amsterdam 1906) 75-166. Resistance to de-equalization was not the only important factor. Competing with small rural businesses in particular was an equally important objective. It was also one of the reasons why the protection which city councils, who recognized the economic and social importance of a powerful middle class, gave by granting their demands was rational.
- 25 See M. Prak, 'Sociale geschiedschrijving van Nederlands Ancien Régime', L. Noordegraaf (ed.), *Ideeën en ideologieën; Studies over economische en sociale geschiedschrijving in Nederland 1894-1991* (Amsterdam 1991) II: 626-634.
- 26 Woltjer, 'Een Hollands stadsbestuur', 267-268.
- 27 W.S. Unger, 'Zeventiende-eeuwsche ondernemersorganisaties', *De Socialistische Gids* 4 (1919) 19-33.
- 28 Van Tijn, 'Pieter de la Court', 321.
- 29 A. Hoynk van Papendrecht, *De Rotterdamsche plateel- en tegelbakkers en hun product 1590-1851* (Rotterdam 1920) 133.
- 30 Cf. D.G. Carasso, 'Amsterdams nijverheid in de 17e en 18e eeuw', *Ons Amsterdam* 35 (1983) 198.
- 31 For details of the various fabrics and raw materials: L. Noordegraaf, 'The New Draperies in the Northern Netherlands between the sixteenth and eighteenth centuries', N. Harte (ed.), *The New Draperies in the Low Countries and England* [1993].
- 32 P.G. van Druenen, 'Gilden, trafieken en de rol van de overheid', *Jaarboek voor de Geschiedenis van Bedrijf en Techniek* 5 (1988) 415-416.
- 33 L.A. Ankum, 'Een bijdrage tot de geschiedenis van de Zaanse olieslagerij', *Tijdschrift voor Geschiedenis* 73 (1960) 246.
- 34 For the underestimated importance of coal in comparison to peat, see: R.W. Unger, 'Energy sources for the Dutch Golden Age; Peat, wind and coal', *Research in Economic History* 9 (1984) 221-253.; G.J. Borger, 'Peatland exploitation in the Low

- Countries', M.G.C. Schouten & M.J. Nooren (eds.), *Peatlands, economy and conservation* (Den Haag 1990) 15-21.
- 35 C.A. Davids, 'De technische ontwikkeling van Nederland in de vroeg-moderne tijd; Literatuur, problemen en hypothesen', *Jaarboek voor de Geschiedenis van Bedrijf en Techniek* 8 (1991) 9-37.
  - 36 J.G. van Dillen, *Van rijkdom en regenten; Handboek tot de economische en sociale geschiedenis van Nederland tijdens de Republiek* (Den Haag 1970) 202.
  - 37 R.W. Unger, 'Technology and industrial organization; Dutch shipbuilding to 1800', *Business History* 18 (1975) 64.
  - 38 J. Vogel, 'De zijdelintindustrie te Haarlem, 1663-1780', *Jaarboek voor de Geschiedenis van Bedrijf en Techniek* 3 (1986) 77-78.
  - 39 E. Koldewey, 'Reliefs in goud; Goudleerbehang van de zestiende tot de achttiende eeuw', *Volkscultuur; Tijdschrift over tradities en tijdverschijnselen* 9 (1992) 26.
  - 40 Davids, 'De technische ontwikkeling', 22.
  - 41 H. Kaptein, 'Passchier Lammertijn: uitvinder of bedrieger?', *Alkmaarse Historische Reeks* 9 (1993).
  - 42 R. Parthesius, 'De dubbele huid van Oostindiëvaarders aan het begin van de 17de eeuw', *Batavia-cahier* 3 (1991) 25-29.
  - 43 B. Westera, 'Gotelingen en mignons', *Cultuur Historisch Jaarboek voor Flevoland* (1992) 38-39.
  - 44 J. Klinkenberg, *Meesters, kooplieden, fabrikeurs; Vroegkapitalisme in de Utrechtse textielnijverheid in de late middeleeuwen en vroegmoderne tijd* (Amsterdam 1991; Master's thesis, Department of Economic and Social History) 29-32.
  - 45 P.G. Hofstijzer, 'Opkomst en ondergang van een Engelse wolfabriek te Leeuwarden in 1685', *De Vrije Fries* 71 (1991) 77-78.
  - 46 J.B. Kist, 'De VOC op Oostenburg. Gebouwen en terreinen', *Van VOC tot Werkspoor; Het Amsterdamse industrieterrein Oostenburg* (Utrecht 1986) 13-34.
  - 47 See notes 66-67 below. Cf. for a career from craftsman to merchant: C. Schmidt, *Om de eer van de familie. Het geslacht Teding van Berkhout 1500-1950; Een sociologische benadering* (Amsterdam 1986) 20. It is unknown to what extent entrepreneurs gave up their original activities after successfully entering into trade (unlike merchants who invested in industrial activities).
  - 48 Brandt, 'Crisis', 63.
  - 49 A.F.J. Niemeijer, *Van accijsbrief tot Zuidam; Scheepsbouw te Haarlem van 1274 tot heden* (Haarlem 1990) 25.
  - 50 Schmidt, *Om de eer van de familie*, 41.
  - 51 J.A. Faber, 'De Noordelijke Nederlanden van 1480 tot 1780; Structuren in beweging', *Algemene geschiedenis der Nederlanden* (Haarlem/Bussum 1980) V: 224.
  - 52 F.J.W. van Kan, *Sleutels tot de macht; De ontwikkeling van het Leidse patriciaat tot 1420* (Hilversum 1988) 80-81, 232.
  - 53 A. van Braam, 'Over de omvang van de Zaanamse scheepsbouw in de 17e en 18e eeuw', *Holland* 24 (1992) 35.
  - 54 Noordegraaf, 'Tussen ambacht en manufactuur', 130.
  - 55 Van Dillen, *Van rijkdom en regenten*, 207.
  - 56 T. Stol, *De veenkolonie Veenendaal; Turfwinning en waterstaat in het zuiden van de Gelderse Vallei, 1546-1653* (Zutphen 1992) 162.

- 57 Ankum, 'Een bijdrage', 242-243.
- 58 R.S. Duplessis, 'Capital and finance in the early modern Veluwe paper industry', *AAG Bijdragen* 28 (1986) 190-192. Supplier's credit facilities lent to entrepreneurs by merchants is also discussed.
- 59 For other facilities, see the article by M.C. 't Hart in this volume.
- 60 A. van Diepen & H. Fuhri Snethlage, *Haarlem en Hals* (Haarlem 1990) 57; Z.W. Sneller, 'De stapel der Westfaalsche linnens te Rotterdam 1669-1672', Z.W. Sneller, *Rotterdams bedrijfsleven in het verleden* (Amsterdam 1940) 89-90.
- 61 The same type of situation was seen shortly after the period discussed here with the arrival of the Huguenots.
- 62 See J.G.C.A. Briels, *Zuidnederlandse boekdrukkers en boekverkopers in de Republiek der Verenigde Nederlanden omstreeks 1570-1630; Een bijdrage tot de geschiedenis van het boek* (Nieuwkoop 1974); P.W. Klein, 'Nederlandse glasmakerijen in de zeventiende en achttiende eeuw', *Economisch- en Sociaal-Historisch Jaarboek* 44 (1981) 34-38; C.A. Davids in this volume, ad note 63.
- 63 In the discussion on the influence of immigrants (with the chauvinistic undertones inherent to such a discussion), too much emphasis is placed on the number of aliens and their immediate economic activities. The 'radiation' of their inventiveness resulting in new 'Dutch' ideas must also be taken into consideration. For a minor but surprising example of the commercial instinct of these foreigners, see: L. Noordegraaf, 'Van Manders Schilders-bouck in delen; Creativiteit en commercie verenigd', *Archivaria* 5 (1992) 26-33.
- 64 P.H.M.G. Offermans, *Arbeid en levensstandaard in Nijmegen omstreeks de Reductie (1550-1600)* (Zutphen 1972) 77-106. For the apprenticeship system, see: R. de Jager, 'Meester, leerjongen, leertijd; Een analyse van zeventiende-eeuwse Noord-Nederlandse leerlingcontracten van kunstschilders, goud- en zilversmeden', *Oud-Holland* 104 (1990) 609-109; Nusteling, *Welvaart en werkgelegenheid*, 150-151.
- 65 L. Noordegraaf, *Daglonen in Alkmaar 1500-1850* (Amsterdam 1980) 69-71; L. Noordegraaf & J.T. Schoenmakers, *Daglonen in Holland 1450-1600* (Amsterdam 1984) 40. See also the article in this volume by Jan de Vries.
- 66 L. Noordegraaf, *Hollands welvaren?; Levensstandaard in Holland 1450-1650* (Bergen 1985) 61-66.
- 67 Expressively described in: I. le Long, *De konst om Geldt te winnen* (Amsterdam 1717).
- 68 Studies of this topic have only just been initiated. In addition to the article in this volume by Jan de Vries, see the detailed case study: A. Knotter & J. Luiten van Zanden, 'Immigratie en arbeidsmarkt in Amsterdam in de 17e eeuw', *Tijdschrift voor Sociale Geschiedenis* 13 (1987) 403-431 (also in Van Zanden, *Arbeid*, ch. III). For a 'speech of the day' brief discussing various possible areas of study, see: L. Noordegraaf, 'Arbeid en arbeidsmarkt. Recent onderzoek in historiografisch perspectief', *Tijdschrift voor Sociale Geschiedenis* 13 (1987) 357-372.
- 69 For the following, see: R. Dekker, 'Labour conflicts and working-class culture in early modern Holland', *International Review of Social History* 35 (1990) 377-420.
- 70 The master craftsman in the putting-out system was the intermediary between 'capital' and 'labour' and was generally increasingly dependent on the entrepreneurs with capital, raw materials and tools. See also: K. Spading, *Holland und die Hanse*

*im 15. Jahrhundert. Zur Problematik des Uebergangs vom Feudalismus zum Kapitalismus* (Weimar 1973) 105-117.

- 71 Quoted in: Dekker, 'Labour conflicts', 388.
- 72 How this relates to the new political relationships in the Republic after 1580 will not be discussed here.
- 73 J. Lucassen, *Jan, Jan Salie en diens kinderen. Vergelijkend onderzoek naar continuïteit en discontinuïteit in de ontwikkeling van arbeidsverhoudingen* (Amsterdam 1991) 26, 34.
- 74 See the articles in this volume by Bieleman and Lindblad. This does not mean that I, like J.I. Israel (*Dutch Primacy in World Trade, 1585-1740* (Oxford 1989)), consider the industrial activities which were dependent on rich trades to be more important than the industry which processed home-grown raw materials and/or that which was oriented towards the home market. See for detailed criticism of Israel's industrial view: L. Noordegraaf, 'De nijverheid van de Republiek ter discussie', in *Leidschrift* 9 (1992) 73-78.
- 75 P. Brusse & M. Windhorst, "'Tot welvaren van de stadt ende verbetering van de neringhe". Arbeidsmarktregulering en economische ontwikkeling in de Amersfoortse textiel 1450-1800', *Textielhistorische Bijdragen* 30 (1990) 7-19.
- 76 Cf. Th. van Tijn, *De menschelike sociëteit. Beschouwingen over staat en maatschappij in het zeventiende-eeuwse Holland* (Utrecht 1992) 17-19. For a price and production trust see: J.H. de Vlieger & E. Homburg, 'Technische vernieuwing in een oude trafiek. De Nederlandse loodwitindustrie, 1600-1870', *Jaarboek voor de Geschiedenis van Bedrijven en Techniek* 9 (1992) 13.
- 77 A debate between Lucassen and Prak who recently, albeit in a somewhat different context, emphasized the 'limitations' to which industrial activity was subjected, would seem to be a matter of course; (see J. Lucassen, 'Het welvaren van Leiden (1659-1662): de wording van een economische theorie over gilden en ondernemerschap' and M. Prak, "'Een verzekerd bestaan". Ambachtslieden, winkeliers en hun gilden in Den Bosch (ca. 1775)', B.M.A. de Vries *et. al* (eds), *De kracht der zwakken. Studies over arbeid en arbeidersbeweging in het verleden* (Amsterdam 1992) 13-48; 49-79).
- 78 Striking is the fact that in areas where growth stagnated or changed to reduction in a later stage of the Republic's history, non-traditional-craftsman systems deteriorated or disappeared altogether while traditional relationships regained their former status.



## VIII

### DUTCH AGRICULTURE IN THE GOLDEN AGE, 1570-1660\*

by

*Jan Bieleman*

#### *1. Introduction*

Over the past decades, scholars writing on Dutch agricultural history have emphasized the important role played by agriculture in the economic boom the Republic experienced after 1570/1580 and, conversely, the way agriculture itself was influenced by economic expansion in this period. For English readers in particular, but for others as well, the image of the agrarian history of the Dutch Republic has in recent years been strongly influenced by Jan de Vries's book, *The Dutch Rural Economy in the Golden Age* (1974).<sup>1</sup> In this book De Vries painted in strong and agile brushstrokes how Dutch agriculture was transformed during this period and revealed the crucial role of the agrarian sector in the economy of the Golden Age of the Republic. Because of a lack of sufficient and adequate studies, he was forced to arrange the relatively few data he had according to two models which, he said, represented the mainstream developments, the one in the coastal provinces, and the other in the inland provinces.

Since then, however, scholars have pointed out that De Vries's distinction between a 'specialization model' and a 'peasant model' is somewhat caricatural and misleading.<sup>2</sup> They argue that De Vries tended to exaggerate the process of specialization in the rural community in the coastal provinces, while at the same time neglecting the role of the inland districts in the 'national' economy. Recently, for instance, Van Zanden has contended that in the fourteenth and fifteenth centuries, when agriculture was orientated towards the urban economy of Flanders where there was a strong demand for certain special agricultural products, an important basis was laid for the developments that were to take place in the northern provinces after the 1580s.<sup>3</sup> Others, like Roessingh and more recently Bieleman,<sup>4</sup> have argued that the rural economy of the inland provinces in fact

became much more interwoven with the more urban economy of the coastal districts (especially Holland) than has long been assumed.

For the early sixteenth century, different demographic zones can be distinguished within the territory of the Northern and Southern Netherlands, which contained some of the most, but also some of the least, densely populated areas known in Europe at that time. Blockmans *et al.* have demonstrated that these zones, seen in global terms, formed more or less concentric rings beginning in the highly urbanized coastal area and moving outwards to the inland areas. Whichever criterion is taken – the degree of urbanization, the absolute number of inhabitants, or the inhabitants per km<sup>2</sup> – the same order always comes out.

Let us look at the most urbanized zone, Flanders. As early as 1469 the degree of urbanization there already amounted to 36%: more than one-third of the population lived in towns. Towards the outer zones of this concentric constellation, population density decreased significantly. In 1469 one could count as many as 45 persons per km<sup>2</sup> in rural Flanders, and even 47 per km<sup>2</sup> in Holland. In 1573 in regions of the second and third ring, for instance in Brabant, there were as many as 27 persons per km<sup>2</sup> and in 1511 in Friesland, 17 per km<sup>2</sup>. In the countryside of Gelderland only 10 persons per km<sup>2</sup> could be counted, and in Overijssel no more than 8 per km<sup>2</sup>. Drenthe must have had a population density of no more than 6 persons per km<sup>2</sup>.<sup>5</sup>

As elsewhere in Europe, in the Netherlands the 'long sixteenth century' was a period of strong population growth. However compared to European standards, growth here was remarkably strong. At the beginning of this period, within the boundaries of the present-day Netherlands, about one million inhabitants could be counted, and this number had increased to 1.5 million by 1600 and to 1.9 million by the middle of the seventeenth century.<sup>6</sup> In the coastal provinces especially, the rate of population growth was extraordinarily high. Although growth began in the countryside, later, especially after 1570/1580, it was caused by remarkably strong growth in the towns.<sup>7</sup> Generally speaking, population growth in the inland provinces was much more moderate than that in the coastal provinces. However these were the regions that suffered most from the warfare during the Revolt, especially the southern districts.

Because of this differentiated population increase, the demographic distribution pattern which already existed in the early sixteenth century was intensified during the 'long sixteenth century'. At the same time, as the northern Dutch towns took over economic supremacy from the Flemish towns, the core of the typical concentric zoning was transferred to the Northern Netherlands.

Scholars writing about the agricultural history of the Netherlands during the Republic usually emphasize the differences in farming and farming developments between the coastal provinces and the interior. They suggest that these are mainly

based on differences in the geological and pedological landscapes in the Netherlands, which can be roughly divided into two main groups: a) the Pleistocene landscape of the inland provinces with their 'poor' sandy soils; and b) the Holocene landscape of the coastal provinces. This second group includes the marine-clay soils in the north (Groningen, Friesland) and southwest (Zeeland, northwestern Brabant), as well as a broad zone of peatland with peat and clay-covered peat in between (that is, between the coastal dune area on one hand and the Pleistocene sandy soils of the inland on the other).<sup>8</sup>

According to this view, farming developments in the coastal districts during the 'long sixteenth century' were dominated by important transformations which led to high technological standards and highly commercialized forms of agriculture. In contrast, farming in the sandy regions of the interior is said to have remained backward and, being less commercialized, to have hardly evolved. Cut off as it was from economic stimuli, farming in the interior is said to have remained on a subsistence level.

It is true that the great differences in soil landscapes had, and still have, a great impact on farming types in the Netherlands and that these also influenced the level of productivity. However, to some degree these differences were less important than has often been assumed. Moreover, it has been shown that the wide variety of farming systems in this part of northwestern Europe was, to a great extent, generated by the distance which separated them from their most important markets, namely the highly urbanized regions of Flanders and (later) of Holland. In my view, the variety in farming systems was, largely, the result of the Von Thünen field of force which crystallized out in the early European agri-economy, the centre of which, especially after 1580, was the emerging urban economy in the southwestern and western coastlands.<sup>9</sup> In fact, it is possible to discern a typical interference between the rigid pattern of the Von Thünen model and the underlying and complex pattern of the pedological landscape. In this way the very pattern of population distribution described above forms the Boserupian framework that helps us to explain this diversity of agricultural systems.<sup>10</sup> It makes not only the differences between the farming systems in the coastal provinces and those in the interior understandable, but also further differences within these regions themselves.

## *2. Coastal provinces*

In the Late Middle Ages and early sixteenth century the physical situation in the coastlands scarcely looked promising. In the north, as in the southwest, a considerable area of land had vanished into the sea, because of heightened storm-flood activities during the Late Middle Ages. The situation in large parts of the peatland areas of Friesland, Utrecht and Holland (especially the northern part of Holland)

were hardly more auspicious. After the occupation of the peatland wilderness during the High Middle Ages, a process of bedding down and oxidation of the peat caused the surface level of the land to sink two metres or, in some places, even three metres or more.<sup>11</sup> Coupled with this, the lakes formed by the dredging of peat became a real threat to the remaining peatland. And so, as elsewhere in Europe, the demographic crisis of the mid-fourteenth century caused newly won and marginal farmlands to be abandoned, and developments in these Dutch regions could quite easily have gone in the same downward direction.

But they did not. The reason was, as Van Zanden has recently argued, that during the Late Middle Ages, these regions became orientated towards the flourishing urban economy of Flanders, which did not suffer (or hardly so) from the crisis as other parts of Europe did.<sup>12</sup> During the sixteenth century, especially after the 1570/1580s, farmers could benefit from strongly increasing prices. An important role in this process was played by the famous Baltic grain trade. The amount of grain imported into Amsterdam increased from 3,000 lasts in 1460, and 10,000 lasts in about 1500, to more than 50,000 lasts during the first half of the seventeenth century.<sup>13</sup> Though not all of this grain remained here, some authors have estimated that the amount which did, was sufficient to feed a significant part of the Dutch population.<sup>14</sup>

Because of this supply of relatively cheap grain, Dutch farmers had the opportunity to switch over to the production of other agricultural products with a higher added value. While everywhere else in Europe prices of grain rose much faster than prices of livestock commodities, Dutch farmers could benefit from the reverse, i.e. prices of livestock commodities rose more quickly than those of grain. At the same time the price of all kinds of special arable products also increased sharply.

In the northern marine-clay area, economic expansion led to important changes in the farming system, as these were coupled with a process of arabilization. In this process cereal cropping became predominant. It was the response of farmers in this area to the Von Thünen field of force by which they were influenced. Faber has shown that in this region, after the early sixteenth century, arable area was continually enlarged at the expense of the area under grass.<sup>15</sup> Some authors claim that the farmers' eagerness to plough up grassland was so great that the Frisian authorities tried to curb it.<sup>16</sup>

At the same time a system of ley farming was introduced. Under this system, certain parts of farmland were shifted every now and then from arable to grass and vice versa, to the benefit of crop yields. Many seventeenth-century lease contracts from the Groningen marine-clay region contain a general clause that the tenant was free to use the farmland at his own discretion: 'to plough, to make hay, or to pasture'.<sup>17</sup> It seems that to turn arable into grassland, farmers began to use a mixture of hayloft sweepings and white-clover seed.<sup>18</sup> This white clover must have

been an important factor in improving the productivity of the grassland. From leases like these it can also be deduced that, at the same time and for the same reason, more labour was invested in the draining of grassland.

Although arable farming became more important, cattle breeding nevertheless remained important in the farming system as a whole, for several reasons. According to information based on probate inventories from the northern part of the Leeuwarderadeel district, it appears that there was even a slight increase in the number of cattle. However, while the number of dairy cows stayed the same or even decreased, the number of young cattle increased. In percentage terms this was an increase of 28% in the period 1566-1574, to one as high as 40% in 1677-1686 and, afterwards, even up to 47%.<sup>19</sup> Like their colleagues in the grassland district of Friesland, arable farmers in the northern clay region got an increasing part of their farming revenues from cattle breeding, providing dairy farmers in Holland with young milk cows or down-calving heifers.

As the process of arablization continued, the need for draught power increased. This is reflected in data from probate inventories from the same part of the Leeuwarderadeel district, which show that the average number of horses and colts rose from 2.4 per farm in the years 1566-1574 to 4.2 in 1677-1686.<sup>20</sup>

Originally, the dominant arable crop was barley. However, during the late sixteenth and the seventeenth centuries this crop gradually lost some of its importance. At the same time wheat as did rye and, especially, peas and beans became more important.<sup>21</sup> These pulses were particularly important because of their ability to fix nitrogen. The partial shift from barley to wheat has been explained as a stronger market orientation on the part of Frisian arable farmers. A Frisian farmer, Rienck Hemmema, who very conscientiously kept a diary over the years 1569-1573, even sold as much as 92% of the wheat he produced. At the same time he bought rye to use in his own household. Of the barley he cultivated, he sold only 63%. The rest of it he probably used as fodder.<sup>22</sup>

It seems that in about the mid-seventeenth century coleseed (*Brassica napus*) was the dominating oleiferous crop, having ousted rapeseed (*Brassica rapa*) in the foregoing period. Together, these crops must have covered 5% or even more of the arable land in Friesland.<sup>23</sup>

Stimulated to increase their production, Frisian farmers not only paid more attention to their farmland by improving drainage, but also began to manure their land more heavily. From Hemmema's diary we know that he bought great quantities of night soil in the nearby town of Franeker. Also, to produce farmyard manure more efficiently, he began to build dung channels in his cowhouse.<sup>24</sup> Again, in a chronicle written by a farmer from Groningen about 1590, there is mention of increasing interest by farmers in the preparation of manure.<sup>25</sup> In 1610, the States of Friesland went so far as to forbid the use of (dried) manure as fuel or export.<sup>26</sup> As a result, and seen in a contemporary European context, yields were

very high and already up to a level that could hardly be improved by technological innovations until the late nineteenth century.<sup>27</sup>

Arable farmers in the southwestern marine-clay area had, in fact, been farming in the centre of the Von Thünen field of force ever since the Late Middle Ages. The character of farming here must have been very similar to the intensive way of farming in Flanders, as this developed in the Late Middle Ages. By then farmers must have already been enjoying the advantages of having a nearby market for industrial and other special crops. And so, being arable farmers, they became particularly orientated towards the cultivation of special crops such as flax, as well as cereals like wheat. Crops such as pulses, onions and all kinds of condiments, like coriander and horseradish were also known. Teasel was produced for use in the textile industry. These same crops were also found in the newly reclaimed marine-clay polders of nearby northwestern Brabant.<sup>28</sup> The high level of efficiency in farming in the Zeeland region can be inferred, for instance, from the fact that in the first decades of the seventeenth century the leasing of special ready-for-sowing land to specialized 'flax farmers' had already become quite general.<sup>29</sup>

Although cereals and an industrial crop like flax were important, no other crop is so especially identified with farming in the Zeeland region as madder is. The cultivation of this crop (together with that of flax) strongly influenced the farming system as a whole in this area. It is believed that cultivation of madder (an important source of dyestuffs) had its first boom in the thirteenth and fourteenth centuries.<sup>30</sup> Recently it has been shown that in the early fourteenth century in the nearby marine-clay polders in Flanders, between Ghent and Bruges, as much as 15% of total arable land was sometimes planted under madder.<sup>31</sup> Afterwards, the cultivation of this labour-intensive crop moved further north, and by the fifteenth century it was being cultivated in the whole of the southwestern marine-clay area. By then large quantities of madder were being exported to the southern and eastern ports of England too. The Italian diplomat Guicciardini wrote in 1567 that the cultivation of madder in Zeeland was so important that this region could supply the whole of Europe with it.<sup>32</sup> And although the expanding cloth industry in Leiden after 1580, as well as in other towns, must have stimulated this cultivation, it is believed that England still remained the most important customer.

A special aspect of the expanding economy of the 'long sixteenth century' – the sophistication of commercial capitalism and the way the agricultural sector became interwoven with it – was the development of a permanent staple market for madder in Rotterdam, as a complement to its primary production and processing. It had proved too difficult for the small madder kilns owned by the farmers, which usually produced small quantities of widely varying qualities, to meet growing demand. The traders at the Rotterdam staple market could stock a great variety of batches in large quantities and therefore could meet any demand at any time.<sup>33</sup> Ever since its emergence in the late sixteenth century, this staple market

had absorbed the supply which previously had gone to small regional markets in towns like Middelburg, Veere, Zierikzee and Dordrecht.

In between these main arable farming regions in the north and in the southwest, and bordering the Pleistocene interior, is a broad zone of peat and clay-covered peat soils in Holland and Utrecht, as well as in Friesland, Groningen and Overijssel. For a long time this area was known pre-eminently as a cattle-breeding and dairying area. However, in the Middle Ages, after this peat wilderness had been occupied, arable farming must still have been possible on top of this drained moorland. However, gradually, because of drainage and cultivation, a process of bedding down of the peat layer began and, consequently, the surface level began to sink. Arable farming became ever more difficult. This caused farmers to shift increasingly to cattle farming.

This process of changing over from an arable-orientated system of farming to one which was more orientated towards cattle breeding and dairy farming (a process which had already started in the fourteenth and fifteenth century), was given added impetus by the outlet for 'luxury' livestock products to the flourishing urban economy in the Southern Netherlands, i.e. Flanders.

In the late fifteenth and early sixteenth centuries, according to the *Enquete* (1494) and the *Informacie* (1514) (both village-by-village surveys of economic conditions in Holland meant for taxation purposes), cattle farming had not yet reached the proportions which were later on to become proverbial. In Holland the largest holdings of cattle consisted of no more than 10 to 12 animals, only a few farmers having more. Average holdings amounted to only 4 to 6 cows, while in Friesland holdings were hardly any larger.<sup>34</sup> Nevertheless, in this period important quantities of dairy products and cattle were already being exported to Germany and Flanders.

However, because of the relative price movement over the 'long sixteenth century', and partly because of changing physical soil conditions, farming here became more specialized and more labour intensive. Farmers in the Frisian grassland districts who still had some arable land, gave up arable farming and switched to cattle breeding and dairy farming. At the same time, the number of cattle rose substantially. For instance, in the southern part of the Leeuwarderadeel district, the total number of cattle per farm increased from about 14 in 1566-1574 to 24 in 1677-1686. This growth meant an increase in the number of dairy cows from an average of 10 to 15. At the same time, the percentage of young cattle in this district rose from 26% to 38%.

These figures show that Frisian farmers in the grassland region, in addition to dairying (i.e. butter production), were now concentrating on breeding cattle. They became important suppliers of milk cows for the highly specialized dairy regions more towards the centre of the Von Thünen field of force, in Holland.

There, especially in the northern part of Holland, stimulated by the 'price revolution' for livestock products, farmers became especially orientated towards the production of whole-milk cheese. Before, even as early as the fifteenth century, large quantities of butter were exported. Toll records for the town of Kampen from 1440 show that the revenues from butter from northern Holland which were transported along the IJssel River up to the German Rhineland were still double those from cheese. But later on, cheese became more important than butter, as dairy production in northern Holland shifted to cheese.<sup>35</sup> It is quite possible that, through improvements in production techniques and the care with which cheese was prepared, it became more suitable for export and so new export markets could be won. About the mid-seventeenth century, almost all the cheese which was exported from the town of Hoorn went to France and southern Europe.<sup>36</sup> France especially became an important market for the cheese farmers of northern Holland.

In the southern part of Holland, in the Rhineland area and in the Delfland area, however, dairy farmers concentrated on the production of butter and skimmed-milk cheese. Butter from these regions was even more highly valued than that from Friesland.<sup>37</sup> For Frisian farmers, somewhat further away from the centre of the Von Thünen agri-economic field of force, cattle breeding had probably become more important than butter production by the mid-seventeenth century. The town of Leiden was known as the most important butter market in Holland, and the English ambassador Sir William Temple wrote: 'They [Dutch dairy farmers] send abroad the best of their own butter, and they buy the cheapest out of Ireland or the north of England for their own use'.<sup>38</sup> But even so, according to Boekel, the export of butter was exceeded by that of cheese.<sup>39</sup>

While Dutch towns expanded, more farmers in the direct vicinity of them applied themselves to producing and selling milk for household consumption. For instance, about 1660, in the Amstelland region, south of Amsterdam, newly-built farmsteads were especially equipped for the production and daily delivery of household milk in that town.<sup>40</sup> Hardly any young cattle were to be found on farms of these so-called *zoetboeren*. These farmers tried to keep up their production throughout the year by buying milk cows from everywhere possible. Similar dairy farms were to be found in the area north of Amsterdam and around other large towns. In 1677, the bailiff of Waterland wrote that hardly any farmers in his region were making cheese or butter any longer, since they had all gone over to the production of household milk to be sold in Amsterdam.<sup>41</sup>

The processes of specialization and intensification in cattle farming must have been accompanied by a remarkable increase in production and productivity. And attempts by farmers to improve the productivity of their herds led to a growing demand for oilcakes for use as fodder. The more rapid increase of prices of dairy cattle compared to prices of their principal products probably reflected the success of farmers' efforts to improve the productivity of their animals, as De Vries concluded.<sup>42</sup> Still, it is very difficult to give any precise data on this matter.

However, figures given by Guicciardini (1567) provide an impression of the level of production in the dairying districts. According to his data, milk yields in the northern Holland village of Assendelft must have already been as high as 2,000 litres per year.<sup>43</sup> About 1660, cheese yields per cow in the Beemster (Holland) were almost the same as those in the early nineteenth century, when it was very high indeed and equivalent to a milk production of over 2,000 litres per cow per year.<sup>44</sup> Increasing milk production must have been an important stimulus for the introduction of horse-driven churn mills in Friesland. The earliest mention of this rather sophisticated piece of equipment dates from about the mid-seventeenth century.<sup>45</sup>

*Enqueste* and *Informacie* tell us that by the early sixteenth century, the fattening of beef cattle was already an important source of income in several places in the northern part of Holland.<sup>46</sup> At first these activities must have been directed, to a great extent, towards answering a demand for meat coming from the flourishing towns of the Southern Netherlands.<sup>47</sup> However, during the course of the sixteenth century, especially after 1580, demand from the towns in the northern coastal regions became increasingly important. In addition, there was growing demand for beef to be salted for provisioning the navy and the commercial fleet, and for export to the colonies. In 1662, Melchior Fokkens wrote that about 2,000 oxen were to be slaughtered for the six VOC vessels which usually left Amsterdam each year for the East Indies.<sup>48</sup>

By the end of the fifteenth century a flow of oxen from Denmark and northern Germany was satisfying the need for beef in the Netherlands. And while cattle farmers in Holland gradually specialized in producing butter or cheese, their own production of young cattle (and therefore of oxen) decreased. This, together with a growing demand for conserved meat, explains the rapid increase in imports of oxen from Denmark during the sixteenth century. Although the warfare of the Dutch Revolt caused a temporary setback in the 1570s, trade soon recovered. All this caused the primary production of beef cattle to shift more and more to the outer fringes of the northwestern European agrarian economy then developing.<sup>49</sup>

During the first decades of the seventeenth century Denmark exported some 50,000 oxen, of which usually 60%, but sometimes even more than 80%, were driven to the Netherlands, especially to Holland.<sup>50</sup> As well as oxen coming overland, some 8,000 to 10,000 were sent by ship from Denmark to Holland.<sup>51</sup> As the demand for cattle for slaughter increased, some regions in the eastern inland provinces of the Netherlands, like Drenthe, also provided a remarkable number of oxen. Taking these numbers together, it is clear that during the first half of the seventeenth century, at least 50,000 oxen came to northern Holland each year to be fattened, and this region became the most important fattening area in Europe.<sup>52</sup>

Various historical sources indicate that by the early sixteenth century, the growing of hemp must have been of widespread importance, in the large zone of peatland

in Holland and Utrecht.<sup>53</sup> During the 'long sixteenth century' an overall expansion became apparent, especially in the Alblasserwaard, the Lopikerwaard and the Krimpenerwaard. This, in fact, is the region where the river-clay soils enter the peatland zone. However, strongly related to the keeping of cattle (to produce manure) and the production of whole-milk cheese, the cultivation of hemp must be seen as a relic of arable farming that had once been widespread, and a form of specialization within an arable farming system.

Although by the early seventeenth century this area was already a grassland region, hemp, heavily manured as it was, was mainly cultivated in small gardens near the farmhouses, on specially prepared, somewhat higher ground.<sup>54</sup> In 1684, in the parish of Laag-Blokland, in the Alblasserwaard (an area of 352 *morgen*; 1 *morgen* = 0.85 ha) an area of 22 *morgen* or 6%, spread over 22 farms, was cultivated with hemp.<sup>55</sup>

After harvesting, the hemp was prepared during the winter months on the farms and was then sold to rope-yards in the towns of the region. What is remarkable is the sophistication in cultivating and harvesting techniques that developed. First, the male plants of this dioecious crop were harvested. These produced the finer qualities of fibre. Some weeks later, the female plants were harvested. These plants gave the coarser fibres. This system meant that a wide range of different and well-distinguished qualities could be produced for the many different ways in which the fibres could be used. After having undergone several preparatory treatments, the finest qualities were used to spin strings for weaving canvas. Several other qualities of coarse hemp fibres were used for making fishing nets and ropes for ship rigging. As ship building flourished and maritime and fishery activities expanded, the demand for these products increased and so did the cultivation of hemp.

In several towns in Holland substantial numbers of rope-yards were established. As early as 1570, Guicciardini wrote that the prosperity of towns like Woerden and Oudewater was completely dependent on this industry. He wrote that 'in dese twee steden bijkans alle netten ende koorden die de Hollanders en de Zeelanders tot hare menichvuldighe visschery daghelijckcs gebruycken, ghemaect worden' (Almost all the nets and ropes used by the fishermen in Holland and Zeeland were made in these towns).<sup>56</sup>

Near the centre of the Von Thünen field of force, other special crops such as hops were still to be found. While in the rest of the river-clay area the mainstream form of agriculture was still the cultivation of several cereals, in the westernmost part, in the Bommelerwaard, which was easily accessible by ship, the cultivation of hops became very important.<sup>57</sup> Hop growers here must have profited from the growing beer production in the Dutch beer towns. Although the old beer towns of Haarlem, Delft and Gouda were outshone by Amsterdam and Rotterdam, the demand for hops increased, not only to quench the thirst of the local town

population, but also to supply the growing naval and merchant fleets and for export to the East and West Indies.<sup>58</sup> This hop region in the western part of the river-clay area formed a whole with a similarly orientated area along the Maas River, formed by the Land van Heusden en Altena, and the 's-Hertogenbosch region. Here, too, the growing of hops had become important, although it is likely that the hop growers here were more orientated towards the brewing industry in the city of 's-Hertogenbosch. In 1698, Blankaart wrote in his *Kruidboek* that in these regions 'entire fields' (*heele velden*) were under hops.<sup>59</sup>

The growth of horticultural centres in several different places in Holland was stimulated by strong urbanization, a relatively high standard of living, and the development of a well-equipped and sophisticated transport system. In contrast to fruit farming, which in some regions emerged as firmly attached to standard farming, horticulture began in the vicinity of towns. The first centres of professional market gardening developed near Leiden and Delft. Around Leiden, Leiderdorp emerged as an important centre. However, in what was later to be the well-known Westland district, hardly any trace of horticulture was to be found at this time. This was also true of several regions in northern Holland which later on were to become important as market-gardening centres.<sup>60</sup>

Tax registers from 1630 show that horticulture had experienced a boom. Four important centres can be distinguished. At first the traditional centres around Leiden and Delft predominated, but newly emerging centres were the areas around Langedijk and Enkhuizen. The Langedijk, north of Alkmaar, became known for its onions, canary, mustard, and coriander seed, as well as for a variety of roots. In the Enkhuizen area, in the densely populated district called De Streek, the growing of vegetables, especially cabbage and carrots, was alternated with other arable crops. Velius, a chronicler from Hoorn, claimed that many pastures had been transformed into gardens because the soil there was extraordinarily well suited to the Hoorn carrot, or yellow root.<sup>61</sup>

In Beverwijk and Heemskerk, market gardening emerged especially after 1610. By the mid-seventeenth century, the secretary of Beverwijk described vegetable growing as an activity in 'daily increase'. These areas enjoyed direct access to Amsterdam across the IJ, and kept up a regular schedule of market boats between the two points by importing night soil and exporting garden produce.<sup>62</sup>

Two villages became well known as centres for arboriculture. The first, Aalsmeer, also produced several kinds of fruits, especially strawberries. Regular barge services delivered these products several times a week to Amsterdam. The other, Boskoop, had about twenty tree nurseries in 1612, which exported their products to all parts of Europe. Across the Zuiderzee, in Friesland, the district of Barradeel (the villages of Berlikum) became an important centre for market gardening.<sup>63</sup> In time, other new specialized horticultural centres like these came into being, well situated in relation to a rapidly expanding town like Amsterdam.

This short survey of the emerging horticultural sector in Dutch agriculture would not be complete without mentioning the cultivation and trade in bulbs, especially tulips. During the first decades of the seventeenth century tulips became the pre-eminent flower of fashion. Prices increased and trade in bulbs became highly speculative. The years 1636-1637 became notorious when there was a full-blown boom on the stock exchange, 'tulpomania'. This was followed by a crash, but although prices fell dramatically, the trade itself survived. After being stripped of its excesses, bulb cultivation and trade remained important as a speciality for a small group.<sup>64</sup>

All this growth in the various sectors of agriculture in the coastal districts led to methods of production which became ever more labour intensive and capital intensive. The growing profitability of agriculture can be seen in rapidly rising rents, especially after 1580.<sup>65</sup> Increasing profitability can be deduced not only from rising rents and land prices, but also from investments made in improving farmsteads and farmland. A well-known example of the latter is the extent to which money was invested in numerous land-reclamation schemes. During the first half of the seventeenth century, in Holland and Utrecht alone the area of reclaimed lakes was about twelve times as high as in the preceding half century.<sup>66</sup>

The flourishing of the agricultural economy can also be seen in the architecture of farmsteads. In the sixteenth century, in the coastal region, the use of wood and loam gave way to bricks, and reed and straw were replaced by tiles.<sup>67</sup> At first, farmers were content to enlarge the existing types of farmsteads. From probate inventories in the Frisian district of Leeuwarderadeel it appears that the traditional Frisian farmstead, the so-called *langhuis* (= long house), had an average of about nine *vakken* or sections. By the mid-sixteenth century, the need for more space had forced farmers to enlarge their farmsteads by extending the number of sections. Though by the 1570s already half the inventories listed separate milk-rooms, hay was still being stored in a separate haystack.<sup>68</sup> The elongation of farmsteads, however, did not solve the problem of the lack of storage space for bulky commodities. Therefore, just before 1600, there was an attempt to find a more efficient type of farmstead by bringing livestock and fodder together under one roof. With this fundamental reshaping of the farmstead in Friesland, a completely new type came into being. Because of its silhouette, it is known as the *kop-hals-romp* (head-neck-rump) type, the head holding the cellared living quarters and the rump the aisled barn, with crops being stored in the middle. In the middle of the seventeenth century this type of farmstead spread into the western part of Groningen and further eastward. Under the same circumstances, in the northern part of Holland the so-called *stolp* came into being in about 1600, in which all farming functions were grouped together under one pyramidal roof, with the haystack in the middle.<sup>69</sup>

### 3. The inland provinces

About 40% of the territory of the present Kingdom of the Netherlands has Pleistocene sandy soils. Traditional farming here must be understood as regional variations on the theme of open-field farming as was practised in several other parts of northwestern Europe. Although there were important differences between regions, all farmers in these regions were, in fact, farming quite near the centre of the northwestern-European agri-economic field of force. Globally speaking, we can distinguish three major regions, each with its own characteristic population density, according to its place in this constellation. First there was the most southern and most densely populated zone, formed by the sandy soils of North Brabant and North Limburg, linked with corresponding regions on the southern side of the present-day national border. Then, as a second zone, were the sandy districts in the provinces of Utrecht, Gelderland (the Veluwe and the Achterhoek) and Overijssel (Salland and Twente). Finally, the third main zone was the sparsely populated province of Drenthe (together with the Westerwolde district, in the province of Groningen). Recently it has become clear that, in the same order, farming systems in these zones showed an increasing rate of intensiveness correlated with the distance which separated them from highly urbanized Flanders and Holland.<sup>70</sup>

Until far into the seventeenth century, farming in Drenthe kept its labour-extensive character:<sup>71</sup> a very low population density of less than 7 persons per km<sup>2</sup>, and large, broad-based farms, with a remarkably high number of cattle and horses. Socio-economically, rural society here was hardly differentiated. Compared to the number of larger farmers, the cottagers, artisans and shopkeepers still formed a minority. Because of the extensive character of farming, there was only limited employment for groups like these. An important reason for this extensive character of farming, besides the extremely poor soil conditions, was the great economic distance which separated this region from the economic centre of northwestern Europe at that time. Because of this, even during the economic boom of the early seventeenth century, prices of rye here were about 10% below the level on the grain exchange in Amsterdam (about 130 km away, as the crow flies). Later on, this difference amounted to as much as 30%.

In the early seventeenth century, on a so-called *vol bedrijf* (full farm, i.e. a farm with full rights in the commons), which held about 32 *mud* (8.6 ha) of arable land in the open field, an average number of 24 (old and young) cattle were kept.<sup>72</sup> At the same time, farms like these usually possessed four adult horses. The significance of this rather high complement of horses, however, lay less in the providing of draught power than has been believed. Just like the farmers on the Geest of northwestern Germany, farmers in Drenthe were involved in an interterritorial division of labour in the breeding of horses. Foals born in the early spring were

sold to farmers in the clay districts of Friesland and Groningen, where they were reared and trained, and then sold again as work horses.

In cattle breeding, Drenthe farmers also became involved in an interterritorial division of labour. To meet the increasing demand for meat, farmers enlarged their herds, which included a high percentage of oxen. After three to five years, these oxen were driven to the rich pastures of the coastal provinces, especially to Holland, where they were fattened during the summer season and then sold for slaughter in the autumn. It has been estimated that during the first half of the seventeenth century Drenthe farmers were able to export some 3,000 to 5,000 oxen every year.

Stimulated by the expansion of the textile industry in Leiden and other towns after 1580, there was also an increase in the demand for native wool, so-called *bruierwol* or heather wool. This caused farmers to extend their flocks of sheep, which were then kept primarily for the production of wool. This growth continued up to about 1660 and can be illustrated by the figures mentioned in a set of local by-laws for the parish of Ruinen. In 1561, these by-laws allowed farmers to keep 35 cows as well as 60 sheep. However, after an adjustment to the by-laws in 1640, the number of sheep was raised to 85, while the number of cows remained the same. To allow better use of the often extremely wet communal wastelands, farmers began improving them by cutting drains.

Notwithstanding the important place livestock had, arable farming was still the pivot on which all farming activities in Drenthe turned. However, although a certain individualization showed up in the use of meadow land in the stream valleys because of increasing land prices, the communal use of open fields remained very strong in this period. This regime still regulated a rigid cropping system, which at the same time enabled the community to use the open fields for grazing during a large part of the year.

Communal grazing of open fields still played a major role, not only as a badly needed feed supplement for farm animals, but perhaps even more, as a way of maintaining the fertility of the arable land. It seems that the system of sod manuring played only a minor role, not becoming important until after the early eighteenth century.

Winter rye was the most important 'cash' crop. Also, it appears that, in the course of the sixteenth century, barley and oats were increasingly being replaced by spring rye. However, because of the extensive character of farming, the yields of these crops were very low. Early seventeenth-century records speak of a yield ratio (seed sown to grain harvested) for winter rye of 1:3, or 1:4 at best. However low these yield ratios may seem, they form part of a continuum which, further towards the fringes of northwestern Europe (northwestern Germany and Denmark), led to figures which were even lower.<sup>73</sup>

Although in general, farming in Drenthe still was a very labour-extensive, in the north, near the town of Groningen, an intensive, almost horticulture-like type of

farming began to flourish, namely the cultivation of hops. There, the village of Peize became almost entirely dependent on this high-risk crop. A lot of these hops were sold to breweries in the town of Groningen, in return for which the hop growers got the city's night soil. However, hop cultivation in northern Drenthe not only answered the demand from the Groningen breweries, but farmers also exported their hops elsewhere, for example, to East Friesland and to the earldom of Bentheim.<sup>74</sup>

In spite of these developments during the first half of the seventeenth century, farming in Drenthe kept its extensive character – of necessity, one may say. However, in the sandy regions closer to the centre of the Von Thünen field of force (i.e. Salland, Twente, the Achterhoek, the Veluwe and the sandy parts of the province of Utrecht), the sixteenth-century price revolution induced a process of intensification and specialization. This can be deduced from a rather spectacular decrease in the number of farm animals. As late as the early sixteenth century a very high complement of farm animals was still to be found all over the Veluwe region. The numbers of horses and sheep were much higher than they were to become later. According to a census held in 1526, the total number of horses was as high as 13,000, while in the early nineteenth century, in 1824, only 6,000 horses were to be counted. Roessingh has shown that the decline must, to a great extent, have already taken place before 1650 and must have been accompanied by a remarkable drop in the number of horses on each farm.<sup>75</sup> Just as in Drenthe and in Salland (Overijssel), the Veluwe farms were also rather large, if measured by the number of horses: about 75% of all horse keepers possessed three or more (adult) animals.

On the other side of the IJssel River, in Salland, as much as 82% of the farmers still had three or more horses in 1602; 54% of them even had four or more.<sup>76</sup> By 1650, in the Veluwe, the proportion of farmers with three or more horses had already dropped to about 40%, and by 1807 to only 17%. This remarkable decrease in the number of horses can only be satisfactorily interpreted by accepting that there must have been a fundamental change in the economic niche of horses on these farms. Just as it still was in Drenthe, in the Veluwe and also in Salland, an important function of horses must have been for breeding. And it is this aspect of horse keeping that must have lost its meaning in the sandy regions of Gelderland and Overijssel during the 'long sixteenth century', while it maintained its importance in the more remote Drenthe region.

During this period there must also have been an important shift in the keeping of sheep and their role in the farming system of the Veluwe. While in 1526 as many as 111,000 sheep were counted, by the early nineteenth century this number had decreased to about 40,000, a decline which, to a large extent, must have taken place before 1650.<sup>77</sup> The function of sheep keeping during the Late Middle Ages

and the early sixteenth century must have been for wool production, rather than for the production of manure, as it was later on.<sup>78</sup>

In spite of a growing demand for wool after 1580, farmers here reduced their flocks of sheep. The decline in the number of sheep (and horses) was a symptom of the fact that farming in the Veluwe (as in the other sandy parts of the central Netherlands) was becoming less extensive. It seems that sheep keeping and horse breeding were activities that were appropriate to the more remote zones of the Von Thünen field of force, like Drenthe and Westerwolde.

The loss of these farming activities in the sandy regions of the central Netherlands was part of a process in which farmers here turned to the production of cereals, i.e. a process of arablization. There are also several indications that certain communal aspects of farming in the sandy regions of the central Netherlands, such as communal grazing on the stubble of open fields, were cut back, although they still survived (of necessity) in the more remote Drenthe region, as we have already seen.

An important feature in the process of arablization was the spread of buckwheat. As early as 1390, buckwheat was mentioned as a crop in the accounts of the Bornhof poorhouse in Zutphen. This is the earliest record of buckwheat in the Northern Netherlands.<sup>79</sup> Although it seems that the cultivation of buckwheat in the Veluwe (as in the Achterhoek) in the fifteenth century had already reached a certain scale, it expanded even more afterwards. According to the records of a grain search in 1566, the cultivation of buckwheat must have been quite important then, as was that of rye and also barley. Later on, in the early nineteenth century, in the parishes of the central and western Veluwe region, some 40 to 50% of the sown arable land appears to have been sown with buckwheat. In Utrecht and in a small sandy region southeast of Amsterdam, the Gooi, the figures were sometimes even higher.<sup>80</sup>

It seems that the expanding cultivation of buckwheat was at the cost of the cultivation of mixed crops of oats and barley, which were especially used as animal fodder. To compensate for this, cultivation of spurry and vetch increased at the same time. Several passages in local by-laws indicate that the cultivation of turnips as an aftercrop also became more important. Both the cultivation of buckwheat and aftercrops brought an end to the collective regime on the open fields in these regions during the sixteenth and seventeenth centuries.<sup>81</sup>

A typical example of the intensive character of farming in the western parts of the Veluwe during the first half of the seventeenth century is the emergence of the cultivation of tobacco.<sup>82</sup> At first a sort of buffer between a growing demand and the rather irregular supply from the West Indies, the inland cultivation of tobacco became really important after 1635. The rapid diffusion of tobacco growing in Utrecht and Gelderland in that period was stimulated, to a great extent, by a system of sharecropping. Several techniques from the already highly developed and sophisticated horticulture, such as the use of hotbeds to grow seedlings early in

the season, were also applied to the cultivation of tobacco. About 1660 special wooden sheds were built for drying the leaves and this, too, appears to have been a Dutch innovation, and was in general use prior to 1690.

The way tobacco cultivation was introduced and spread in the early seventeenth century, as a joint venture between merchants and farmers, is also a typical expression of the commercial capitalist system of the time. It is a fine example of the interdependence in the Dutch Republic between the rural community in these regions and urban-based manufacturing and trade. About the middle of the seventeenth century tobacco cultivation was to be found near several small towns like Amersfoort, Nijkerk, Wageningen, Arnhem and Rhenen.

A remarkable boom in reclamation activities in the Veluwe area in the decades of the mid-seventeenth century indicates that agriculture in these sandy regions was going through an expansionary period.<sup>83</sup> Certain regulations in by-laws from the parish of De Lutte (near the town of Oldenzaal), in the Twente district, indicate that here, too, increasing farm production necessitated larger farm buildings. These by-laws suggest that the length of farmsteads here increased from about 12 metres to 18 or 24 metres.<sup>84</sup>

Hardly anything is known about farming in the sandy soils of the present-day province of North Brabant. To get an idea, however, it is useful to look across the present national border as far as Flanders. If we put the Drenthe region with its very low population density at one end, we then see densely populated Flanders at the other end of a range of sandy regions with increasing population density.

By the middle of the fifteenth century (1469) the Flemish countryside already had as many as 45 persons per km<sup>2</sup>.<sup>85</sup> These extremely high figures occurred in a rural community which in socio-economic respects was already highly differentiated. The numerous small and very small farms were worked with an extremely high input of labour. By about the middle of the sixteenth century half the farms in Flanders had less than one hectare of farmland.<sup>86</sup>

The cultivation of several kinds of industrial crops, especially flax, was one of the main elements of farming in Flanders. On small farms, flax cultivation was just within or just over the bounds of what was technically possible. Besides a very intensive method of tillage, successful flax cultivation required heavy manuring.<sup>87</sup> This heavy manuring was made possible by the introduction of a system of permanent stall feeding. This in turn required animals to be fed with fodder, and it was therefore during the second half of the fifteenth century that turnips began to be cultivated as a fodder crop. At the end of the sixteenth century, clover came into use, but it was not until the late seventeenth and the eighteenth centuries that its use became generally widespread.<sup>88</sup> As a result, productivity was very high indeed. On his journey through Flanders and the Waas country (the region around Ghent and Antwerp) in 1644-1645, Sir Richard Weston was astounded by this high productivity. He wrote that, in spite of the 'barrenness of

the soil', which in an uncultivated state grew only heather and broom, yields were as high as in the marine-clay districts, or even higher.<sup>89</sup>

The high productivity of Flemish agriculture was to a great extent based on intensive tillage of arable land, not only for the cultivation of flax but also for several sorts of cereals. Spade cultivation instead of ploughing, as was done on the smallest farms, was a precondition for the relatively large area of flax grown on these farms. In order to achieve better drainage, winter-sown grain crops were cultivated in special beds. Sometimes even spring-sown crops, such as oats, were cultivated that way.<sup>90</sup>

Recently, remains of similar forms of *beddenbouw* (a sort of ridge-and-furrow system) have been found in the sandy parts of present-day North Brabant.<sup>91</sup> This finding makes it clear that here, also, a lot of farm labour had been applied to improve the conditions under which crops were cultivated. It is clearly an aspect of a farming system that at an early stage was based on a high input of labour, coupled with a high population density. At the end of the fifteenth century Brabant already had as many as 27 persons per km<sup>2</sup>, a lot fewer than in Flanders, but at the same time, quite a lot more than in other sandy regions of the Northern Netherlands.<sup>92</sup>

Just as in the other sandy regions, in Brabant rye was also a very important crop, alongside barley and oats. However, in the early sixteenth century, buckwheat too seems to have been important, especially along the northern fringes of the sands of Brabant. It appears that this crop gained in importance during the second half of the sixteenth and the seventeenth centuries. In lease payments in kind, the portion of buckwheat increased throughout that period, and by the mid-seventeenth century it had become more important than barley.<sup>93</sup>

It is obvious that communal grazing of the stubble after harvest, as practised in Drenthe and the central Netherlands, had here in a much earlier period gone beyond the bounds of what was possible. The cultivation of aftercrops had become an indispensable part of crop-rotation systems. By far the most important aftercrop in Brabant was spurry.<sup>94</sup> The introduction and extension of this aftercrop made North Brabant, especially the western and northern parts, the first of the sandy regions of the Northern Netherlands where stall feeding came into use.

In the sixteenth century, thanks to spurry and stall feeding, farmers in Brabant were able to produce significant quantities of butter for market. In the late sixteenth century ever larger volumes of Brabant butter were brought to the Antwerp market. In many villages butter merchants bought the butter from the farmers and resold it in larger town markets.<sup>95</sup> Autumn butter, churned in October and November, was particularly sought after. It was considered one of the most important products of the region. And so, while farming in Brabant in the fifteenth century was primarily orientated towards grain cropping, it seems that the production of butter as a cash product gained in importance throughout the sixteenth and seventeenth centuries.<sup>96</sup>

#### 4. Conclusion

The 'long sixteenth century', and especially the decades after 1570/1580, witnessed a cascade of innovations in Dutch agriculture. The Dutch 'Golden Age' proved to be a hey-day for more than just trade, industry and the arts. Just as agriculture in the western and southwestern provinces benefited from the flourishing Flemish economy during the Late Middle Ages, so the economic boom in the Northern Netherlands after 1580 gave impetus to farmers and farming there. Conversely, other sectors of the economy were also able to benefit from a range of highly developed forms of agriculture. The keywords in this process are specialization and intensification, not only through a larger input of capital, but also through increasing input of labour. In the coastal provinces especially, farming developed standards which had no equal in Europe. In the various regions of the interior, farming in each region reacted to the economic stimuli in its own way. This reaction depended on the position of the region in a Von Thünen field of force, of which the highly urbanized province of Holland unquestionably became the centre. Rather than speaking in terms of a dichotomy between coastal regions and the interior, it is preferable to emphasize an agri-economic continuum over the different farming regions.

#### NOTES

- \* This article is a shortened and somewhat adapted version of the first chapter of my book *Geschiedenis van de landbouw in Nederland 1500-1950; Veranderingen en verscheidenheid* (Amsterdam/Meppel 1992).
- 1 J. de Vries, *The Dutch rural economy in the Golden Age, 1500-1700* (New Haven/London 1974).
  - 2 In 1985, Noordegraaf was the first scholar to criticize De Vries's ideas on the process of specialization in the rural community in Holland between 1500 and 1650. L. Noordegraaf, 'Het platteland van Holland in de zestiende eeuw; Anachronismen, modelgebruik en traditionele bronnenkritiek', *Economisch- en Sociaal-Historisch Jaarboek* 48 (1985) 8-18. Also: A. Knotter, 'De Amsterdamse scheepvaart en het Noordhollandse platteland in de 16e en 17e eeuw; Het probleem van de arbeidsmarkt', *Holland* 16 (1984) 123-154; J.L. van Zanden, 'Op zoek naar de "missing link"; Hypothesen over de opkomst van Holland in de late Middeleeuwen en de vroege moderne tijd', *Tijdschrift voor sociale geschiedenis* 14 (1988) 359-386; J.L. van Zanden, *Arbeid tijdens het handelskapitalisme; Opkomst en neergang van de Hollandse economie, 1350-1850* (Bergen 1991) 41ff.
  - 3 Van Zanden, 'Op zoek naar de "missing link"; Van Zanden, *Arbeid*.
  - 4 H.K. Roessingh, *Inlandse tabak; Expansie en contractie van een handelsgewas in de 17e en 18e eeuw in Nederland* (AGG Bijdragen 20 (1976)/Zutphen 1976); H.K. Roessingh, 'Tobacco growing in Holland in the seventeenth and eighteenth centuries; A case study of the innovation spirit of Dutch peasants', *The Low Countries History*

- Yearbook; Acta Historica Neerlandicae* 11 (1978) 18-54; H.K. Roessingh, 'Landbouw in de Noordelijke Nederlanden 1650-1815', *Algemene geschiedenis der Nederlanden* (Haarlem, 1979) VIII: 16-72; J. Bieleman, *Boeren op het Drenthe zand 1600-1910; Een nieuwe visie op de 'oude' landbouw* (AGG Bijdragen 29 (1987)/Utrecht 1987); J. Bieleman, 'De verscheidenheid van de landbouw op de Nederlandse zandgronden tijdens "de lange 16e eeuw"', *Bijdragen en Mededelingen betreffende de Geschiedenis der Nederlanden* 105 (1990) 537-552.
- 5 W.P. Blockmans *et al.*, 'Tussen crisis en welvaart; Sociale veranderingen 1300-1500', *Algemene geschiedenis der Nederlanden* (Haarlem 1980) IV: 42-86. Bieleman, *Boeren*, 237ff.
  - 6 J.A. Faber *et al.*, 'Population changes and economic development in the Netherlands; A historical survey', *AAG Bijdragen* 12 (1965) 47-133.
  - 7 De Vries, *The Dutch rural economy*, 84ff.; A.M. van der Woude, 'Demografische ontwikkelingen van de Noordelijke Nederlanden 1500-1800', *Algemene geschiedenis der Nederlanden* (Haarlem 1980) V: 257ff.; A.M. van der Woude, 'La ville Néerlandaise', A. Lottin *et al.* (eds), *Études sur les villes en Europe occidentale; Milieu du XVIIe siècle à la veille de la Révolution française* (Paris 1983) 307ff.
  - 8 In fact, speaking in these broad terms, a third main geological landscape can be distinguished, which is formed by the river clay area that joins the deltas of the Rhine and Meuse Rivers. However, hardly anything is known yet about the agricultural history of this region.
  - 9 The German economist Johann Heinrich von Thünen, in his study *Der Isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie* (first published in 1826), argued that the cost of transporting agricultural products to market was the major determinant of the intensiveness of farming systems. His 'isolated state' was a plain with no differences in soil or climate, within a radius of 370 km from a central town, where all produce was sold. Beyond this was a wilderness. Towards this central town intensiveness of agricultural systems increased with distance from the town, according to a concentric model. In 1959 the German scholar Achilles demonstrated the existence of a Von Thünen-like zoning over Europe in cereal prices, of which Amsterdam formed the ultimate focus. W. Achilles, 'Getreidepreise und Getreidehandelsbeziehungen europäischer Räume im 16. und 17. Jahrhundert', *Zeitschrift für Agrargeschichte und Agrarsoziologie* 7 (1959) 32-55. After Achilles, Abel pointed out that as early as the 16th century in northwestern Europe, zoning in agriculture appeared that is in great conformity with Von Thünen's model of the 'isolated state'. W. Abel, *Agrarkrisen und Agrarkonjunktur; Eine Geschichte der Land- und Ernährungswirtschaft Mitteleuropas seit dem hohen Mittelalter* (Hamburg/Berlin 1978<sup>3</sup>) 112-114. See also: H.-J. Nitz, 'Transformation of old and formation of new structures in the rural landscape of northern Central Europe during the 16th to the 18th centuries under the impact of the early modern commercial economy', *Tijdschrift van de Belgische Vereniging Aardrijkskundige Studies BEVAS* 58 (1989) 267-290; J. Myrdal & J. Söderberg, *Kontinuitetens dynamik: agrar ekonomi i 1500-talets Sverige* (Stockholm 1991); B.M. Campbell *et al.*, 'Rural land-use in the metropolitan hinterland, 1270-1339; The evidence of inquisitions post mortem', *The Agricultural History Review* 40 (1992) 1-22.
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- 11 J.J.J.M. Beenakker, 'De agrarische veenlandschappen', S. Barends *et al.* (eds), *Het Nederlandse landschap; Een historisch-geografische benadering* (Utrecht 1986) 39ff.
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  - 13 J.A. Faber, 'Het probleem van de dalende graanaanvoer uit de Oostzeelanden in de tweede helft van de zeventiende eeuw', *AAG Bijdragen* 9 (1963) 3-28.
  - 14 According to Slicher van Bath, in the sixteenth century this amount was enough to feed 13 to 16% of the Dutch population. B.H. Slicher van Bath, *De agrarische geschiedenis van West-Europa 50-1850* (Utrecht 1960<sup>1</sup>-1987<sup>6</sup>) 264 and 405 note 136. Jan de Vries reckons that in about the middle of the seventeenth century, imported quantities of grain were enough to supply half of the population of Holland, Utrecht, Friesland and Groningen. De Vries, *The Dutch rural economy*, 172.
  - 15 J.A. Faber, *Drie eeuwen Friesland; Economische en sociale vernieuwingen van 1500 tot 1800* (AAG Bijdragen 17 (1972)/Leeuwarden 1972) 191ff.
  - 16 T.J. de Boer, 'De Friesche kleiboer', *Tweemaandelijks Tijdschrift voor Letteren, Kunst, Wetenschap en Politiek* 4 (1897/98) 235.
  - 17 P.C.M. Hoppenbrouwers, 'Grondgebruik en agrarische bedrijfsstructuur in het Oldambt na de vroegste inpolderingen (1630 - ca. 1720)', J.N.H. Elerie & P.C.M. Hoppenbrouwers (eds), *Het Oldambt II: Nieuwe visies op geschiedenis en actuele problemen* [= *Historia Agriculturae* 22 (1991)] 89.
  - 18 B.H. Slicher van Bath, 'Een Fries landbouwbedrijf in de tweede helft van de 16e eeuw', *Agronomisch-Historische Bijdragen* 4 (1958) 99; Slicher van Bath, *De agrarische geschiedenis*, 198ff. and 268ff.; W. Bergsma & E.H. Waterbolk, *Kroniekje van een Ommelander boer in de zestiende eeuw* (Groningen 1986) 35-36.
  - 19 De Vries, *The Dutch rural economy*, 137-140 tabel 4.10.
  - 20 De Vries, *The Dutch rural economy*, 137-140 tabel 4.10.
  - 21 De Vries, *The Dutch rural economy*, 148 table 4.11.
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  - 24 Slicher van Bath, 'Een Fries landbouwbedrijf', 89 and 159.
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# IX

## INTRAREGIONAL TRADE AND THE PORT SYSTEM IN HOLLAND, 1400-1700\*

by

*Clé Lesger*

### *1. Introduction*

In his description of Holland, the seventeenth-century textile manufacturer Pieter de la Court pointed out the importance of domestic trade for Amsterdam's position in the international exchange of goods. In his opinion, excellent inland connections had made Amsterdam a port pre-eminently suited for goods shipped abroad from everywhere in the Dutch Republic. At the same time it formed an ideally situated distribution centre for goods imported from overseas. De la Court goes on to say that it is well known by all that the excellent connections of Amsterdam with its hinterland 'is a very great conveniency for readily equipping and full lading of ships, and selling their goods speedily, and at the highest price'.<sup>1</sup> He even states that these good inland connections were 'ten times more considerable' than the fact that Amsterdam was difficult to reach for large seagoing vessels.

In De la Court's opinion, Amsterdam's central position in domestic trade led to an increase in supply and demand on its commodity market. Consequently, the Amsterdam staple market became more attractive. After all, merchants ran little risk of not being able to sell their products, or of not being able to buy products for further trade. For shipmasters and shipowners the staple market meant they were more likely to leave with a return cargo. Hence, trading risks in Amsterdam were smaller than elsewhere. The importance of these reduced trading risks at a time when the exchange of goods was expensive and means of communications were poor should not be underestimated.

In spite of its importance for the central position of the Amsterdam staple market in the international exchange of goods, domestic trade and transport have received little attention in the Dutch economic historiography of the early modern period.<sup>2</sup> Of course the importance of domestic trade and transport was not limited to

Amsterdam. Because of an extensive network of domestic connections, all regions of the Dutch Republic were, according to the standards of that period, easily accessible, which made it possible for regional and local specialization to reach dimensions hardly conceivable elsewhere in Europe. The relevance of this geographical specialization in the Dutch Republic has, in historiography, never quite been done justice to. As there are so few preliminary studies in this field, this article is of an exploratory nature. An attempt will be made to depict the development of the domestic trading network during the fifteenth century up to and including the seventeenth century. Special attention will be paid to the spatial and organizational structure of this domestic trading network and to the question which factors caused certain towns to become prominent in domestic trade.

With such an approach, it is important to decide which functions gave a town its importance in domestic trade. An analytical distinction can be made between a town's function as a service centre for the surrounding area on the one hand and its intermediary function between its hinterland and the outside world (the so-called foreland) on the other.<sup>3</sup> Although the importance of the market function should not be underestimated, it was primarily the intermediary function which decided the role of a town in the network of domestic trade and shipping.<sup>4</sup> It is obvious that this intermediary function was most highly developed in those towns which were centres in the interregional and international exchange of goods.<sup>5</sup> It is therefore not by chance, as will be shown later, that the great ports of Holland were also important centres for domestic trade and shipping. Hence, for this study a framework has been chosen in which the development of domestic trade and shipping is linked to the intermediary function of towns. As this study concentrates on developments in the province of Holland, the intermediary function of the towns largely coincides with their port activities. After all, the condition of the roads in Holland was poor, and practically all towns were situated on navigable waterways and had at least rudimentary port facilities.

The decision to limit this study to the province of Holland has been dictated not only by practical considerations, but also by reasons of principle. When studying a development over a relatively long period of time, an inevitable question is: what is meant by inland? Do the borders of the Dutch Republic or the Dutch Kingdom form a realistic framework when an earlier period is being discussed? For example, how realistic is it to call the exchange of goods between Holland and the IJssel region during the later Middle Ages 'domestic' trade, and the exchange of goods between Walcheren (in Zeeland) and Flanders and Brabant 'foreign' trade? Everything is in favour of considering 'inland' as the result of a protracted process rather than as an established fact and starting point for an analysis. For this article, therefore, a regional approach has been used. The province of Holland is best suited because this region, during the period under study, grew to be the economic centre of the Northern Netherlands and because the towns in Holland became the most important centres for domestic trade and shipping. In practice

this means that *intraregional* trade and traffic and the structure of the port system in Holland will be emphasized, and that less attention will be paid to the other regions that, together with Holland, finally made up the Dutch Republic. When the Dutch Republic as a whole is discussed, the term 'inland' will be used; in all other cases the terms 'region' and 'intraregional' trade and shipping will be used.

The approach used in this study necessitates a model in which the development of domestic trade is linked to the port activities of the towns. In the following section such a model will be presented. In sections 3 and 4 respectively the changing structure of the port system in Holland and the organizational and spatial developments of the domestic trading network will be considered. In section 5 an attempt will be made to interpret and to explain the observed developments by using the model presented below. To conclude, a summary is given and a few tentative remarks are made concerning the importance of domestic trade for the economic development of Holland and the Dutch Republic.

## *2. A model for the spatial development of a port system in relation to domestic trade*<sup>6</sup>

Because the economy in the Northern Netherlands was closely linked to international trade and shipping, the domestic trading network should not be seen as a closed system. On the contrary, the most important feature of this network was its close connection with the ports and, via these ports, with the international exchange of goods. A model describing such a connection has been developed by Taaffe, Morill and Gould on the basis of a study on the east coast of Africa. Rimmer later expanded and refined this model in a study on the development of the port system in Australia.<sup>7</sup> In this article Rimmer's version will be used.

Basically what this model means is that because not all towns had equal means of access to the hinterland, an increase in port activities took place in a limited number of ports. The various phases of the model of selective growth, as this process can best be called, can be seen in figure 1. The first stage is characterized by the presence of many small ports along the coast, each with their own limited hinterland. As soon as main transport routes from some of these ports to the hinterland have been built, a different situation arises. Because of these so-called penetration lines, transport costs from the ports situated on the new routes to the hinterland and vice versa are considerably reduced. This enables some towns to expand their hinterland at the expense of others. Rimmer calls this kind of situation 'port piracy', although the term 'hinterland piracy' is a better description of the situation as described in phase 2 of figure 1. This process of concentration is carried on in phase 3, and ports P1 and P3 are absorbed into the network around P2. As the hinterland of P1 and P3 is now accessible from P2, these ports lose an important part of their intermediary function between hinterland and the outside



### *3. The port system in Holland*

The economic development of Holland during the Late Middle Ages was accompanied by a gradual differentiation among Dutch ports, a differentiation which became increasingly discernible during the fifteenth century. Within the region the ports in the the Rhine-Meuse delta can be distinguished from those on the Dutch Zuyder Zee coast and the IJ. The former were linked to what had traditionally been the economic centre of the province. Here Dordrecht was the main port. As it was extremely favourably situated along the trade routes between the German Rhineland and the valley of the Meuse River on the one hand, and the provinces of Flanders, Brabant, Holland and the North Sea coastal countries on the other, Dordrecht merchants succeeded in obtaining their share in the exchange of goods. Dordrecht's position was strengthened by the fact that the counts of Holland had made the city the centre of their toll system. Compared to Dordrecht, places like Schiedam, Delfshaven and Rotterdam – outports of the industrial towns Delft, Leiden and Gouda – were of relatively little importance in the fifteenth century.<sup>8</sup>

While the ports in the Rhine-Meuse delta acted as intermediaries in the east-west exchange of goods, the Dutch Zuyder Zee ports played a role in the north-south exchange. Here Amsterdam in particular became an important centre. Not only was this town equipped with a suitably deep harbour in the IJ, it also had excellent connections with a relatively large hinterland. From Amsterdam the area north of the IJ was easily accessible via inland waterways, just as were the industrial centres in the southern part of Holland, the Zeeland delta and the densely populated and highly developed provinces of Flanders and Brabant. During the course of the fifteenth century Amsterdam became the main intermediary for the exchange of goods between these areas and northern and northeastern Europe. This intermediary function was partly of a passive nature as long as the town acted only as a port of transshipment for goods shipped by freighters not based in Amsterdam.<sup>9</sup> It became active in nature due to the commercial activities of Amsterdam merchants who developed a trade interest in the Baltic area. It is therefore not surprising that Amsterdam played a leading role in the trade conflicts with the Hanseatic towns.<sup>10</sup> In 1452 Duke Philip the Good called Amsterdam, not unjustly, 'la ville la plus marchande de tout nostre dit pays de Hollande'.<sup>11</sup> Indeed, Amsterdam had surpassed the other ports on the Holland Zuyder Zee coast which also kept in touch with northern and northeastern Europe. Gateway cities like Hoorn, Enkhuizen, Medemblik and Edam were, because of their geographical location, not the most suitable gateways to the southern part of Holland, nor to the large centres in Flanders and Brabant. Furthermore, their immediate hinterland – the area north of the IJ – was not densely populated, and industry there was not as important as in the area south of the IJ.

It should, however, be emphasized that all the towns as well as some villages in Holland maintained trade relations with overseas and neighbouring territories. This can be seen most clearly from the products exported to the great annual fairs in the IJssel region about 1440. Merchants from all the German regions came both to stock up and to sell their merchandise at these fairs which, like the annual fairs in Brabant, played an important role in the international exchange of goods.<sup>12</sup> It is striking that export from Holland via the Zuyder Zee to the IJssel region did not take place from a few favourably located gateway towns. On the contrary, sixteen towns north of the IJ and twelve to the south were involved.<sup>13</sup> What should also be taken into account is the fact that, with regard to the southern part of Holland, part of the trade with the IJssel fairs was transported over land.<sup>14</sup> Trade contacts were, however, not limited to neighbouring regions like the IJssel valley. Information dating from about 1477 indicates that there was also a lot of trade with other regions. The presence of large, seaworthy vessels and trade *Westwaerts* or *Oostwaerts*, that is to say with France and England or with northern and north-eastern Europe, was mentioned in nearly all the towns.<sup>15</sup> Information about export to the annual fairs in the IJssel region confirms the differentiation among the towns in the northern part of the province mentioned above. Not only the largest number of consignments, but also the greatest diversity of goods were shipped from Amsterdam. Goods from southern and southwestern Europe, such as raisins, figs, almonds, liquorice and wines, purchased in Flemish and Brabant towns and exported from Amsterdam to the IJssel region and its hinterland, clearly demonstrate the intermediary function of Amsterdam. More than any other gateway, Amsterdam was the northern outpost for the great trading centres in the Southern Netherlands.<sup>16</sup>

From the final quarter of the fifteenth century onwards, great changes took place. Inquiries into the demographic, economic and financial situation of the towns and villages in Holland, which were held in 1494 and 1514, show that the number of seaworthy vessels declined. In Hoorn, one of the larger ports on the Zuyder Zee coast, the number of large trading vessels fell from 40 in 1477 to 7 in 1494 and only 4 or 5 in 1514. In the eight towns and villages for which figures are available, the total number of seaworthy vessels fell from 202 to 61 and 45 or 50 in the same years.<sup>17</sup> It is obvious that such a decline affected immediate trade relations with points overseas, as can indeed be demonstrated in the case of Hoorn. There it was noted in 1494 that trade in tar and pitch, products typical of the Baltic trade, had virtually disappeared. Existing trade contacts between Hoorn and Newcastle had also been broken off: from the end of the fifteenth century Newcastle records do not mention any more ships or freighters from Hoorn. After this time, wool, the raw material for the Hoorn textile industry, was no longer supplied directly to Hoorn.<sup>18</sup> In Leiden, the same development can be seen regarding the export of textiles. From the beginning of the sixteenth century Leiden cloth was not sent

directly to either overseas outlets nor to the great annual fairs in the IJssel region, Flanders or Brabant.<sup>19</sup>

There was only one town in Holland where direct trade relations with abroad had remained unaffected: Amsterdam. It is true that in 1514 representatives of the town complained that in the preceding years a lot of trading vessels had been lost, but the leasing figures of the *kraan* (crane) do not indicate a decline in trade. Between 1498 and 1514 proceeds of the *kraan* had increased fourfold, and, as Noordegraaf has rightly pointed out, such an increase is not conceivable if trade and shipping were under pressure.<sup>20</sup> This is consistent with the fact that Amsterdam was the only town in the region in which population increased during the last quarter of the fifteenth century.<sup>21</sup> In contrast the second large mercantile city in the region – Dordrecht – had to contend with a decline. In 1514 it was noted that whereas previously 18 to 20 hulks (large seaworthy vessels) had been called in for trade both with the east and the west, now, in 1514, only two hulks and three smaller vessels were being operated. The city's commercial ties with overseas were then largely limited to England and Norway.<sup>22</sup>

A similar process of contraction took place in the contacts between the Holland gateway cities and the neighbouring regions. Not only did the number of seaworthy vessels in the ports of Holland decline, the number of smaller vessels like barges also showed a sharp drop from the final quarter of the fifteenth century onwards. In about a dozen towns in Holland, the total number of inland waterway vessels dropped from 388 in 1477 to 114 in 1494.<sup>23</sup> These vessels were of course partly involved in intraregional trade, but it is clear from comments made by the representatives of Medemblik, Schagen, Weesp and Schoonhoven that contact with neighbouring regions like the IJssel region, Zeeland, Flanders and Brabant had also decreased. In 1514 Amsterdam and Dordrecht were the only towns with a large fleet of inland waterway vessels (respectively 83 or 84 and 140). With these vessels the towns could keep in close touch with neighbouring areas.<sup>24</sup>

As far as I know there is only one source which allows for a more detailed examination of the size and composition of the flow of goods in the gateway cities in Holland: a tax of 1% of the value of the exported goods levied during the period 1543-1545. Table 1 shows the information obtained from this source for the period 10 February to 10 August 1545. To interpret this table correctly, it is important to know that the tax on exported goods was raised during a period of war and international tension, so that trade and shipping were probably less extensive than at other times. Due to the nature of this source, trade with the Southern Netherlands was not registered, and finally English merchants were exempt from this tax.<sup>25</sup> In spite of these limitations it will be clear that the information in the table is in keeping with what has been argued above. Considering the total value of exported goods, Amsterdam was by far the most important port for exported goods. The value was three times as high as that of all the other ports taken together. The table also shows that Amsterdam maintained trade relations with more places than the

other ports. Table 2 shows what goods were exported. Most gateway towns exported an extremely limited range of goods: in most cases not more than about 20 products. Moreover, export was restricted to only one or a few of the groups of products listed in the table. In Gorinchem, for example, with total exports of 32,000 guilders, 59% of the total value fell under the category of crude inorganic materials, but in fact only one product was exported: salt. Again, Amsterdam is the exception, exporting about 190 products covering all the product groups. Dordrecht, with 41 products, came second. This is in keeping with the important contacts Dordrecht had with the German Rhineland, Zeeland, Flanders and Brabant, as mentioned before.

From the preceding it may be concluded that to a great extent Amsterdam had acquired a monopoly on the exchange of goods between Holland and overseas from the latter part of the fifteenth century. With the exception of Dordrecht, export from other ports did not amount to much, just as the range of goods amounted to very little. Amsterdam had indeed become the gateway to Holland. From 90 products at the end of the fifteenth century, the supply on the Amsterdam market had increased to about 190 products by the middle of the sixteenth century.<sup>26</sup> It should therefore not be surprising that the preponderance of Amsterdam over the other gateways in the region was felt in many respects, and gave rise to conflict.<sup>27</sup>

Although Amsterdam maintained its preponderance, the port activities of the other gateways in Holland did not remain as insignificant as they had been during the middle of the sixteenth century. In Hoorn and Enkhuizen, the most important ports on the Holland Zuyder Zee coast after Amsterdam, overseas trading activities greatly increased during the second half of the century. And these activities were no longer limited to the area between the Baltic and Gibraltar. Shipowners, shipmasters and merchants took part in the spectacular expansion of the Holland trading network across the White Sea, the Mediterranean, the west coast of Africa, the East Indies and America.

It must, however, be emphasized that, apart from Amsterdam, the gateway activities of the Zuyder Zee ports were limited as far as the value and the composition of goods were concerned. Table 3 records the proceeds of the *convoeien en licenten* (a tax levied on imported and exported goods) in the major tax-collecting offices situated along the Holland part of the Zuyder Zee coast. It is clear that Amsterdam outweighed the other ports. The entire proceeds of this tax for Enkhuizen, Hoorn, Medemblik, Edam and Monnickendam amounted to 19% of that of Amsterdam during the period 1589-1595. In the course of the seventeenth century this figure dropped to 14% during 1624-1629, 9% during 1665-1670, and finally to 7% in 1681-1684.<sup>28</sup> Also striking was that trade was largely limited to northern and northeastern Europe (see table 4). Only towns such as Hoorn and Enkhuizen maintained contacts with a more extensive area, but even

in these gateways there was little variation in the imported and exported goods.<sup>29</sup> It is true that both towns did import and export spices and West Indies products (mainly tobacco), but on the whole Hoorn traded in wood, salt and cheese, and Enkhuizen in herring and cheese. Also telling is the fact that salt was the only bulk good imported from southern Europe. Luxury products such as silk, wine, olive oil, currants and figs were not imported directly to Hoorn and Enkhuizen.<sup>30</sup> The limited sphere of influence trade had in these gateway cities is apparent from the fact that export was largely aimed at the neighbouring country of France, in particular Rouen, the gateway to the densely populated Seine basin with Paris as its most important centre. During the period November 1643 to December 1645, 90% of the total value of exported goods from Enkhuizen was shipped to France; for Hoorn this figure was 50% for the period 1652-1653.<sup>31</sup>

The limited activities in ports like Enkhuizen, Hoorn, Medemblik, Edam and Monnickendam were of course reflected in the way the port system functioned in the northern part of Holland. Elsewhere I have shown that Amsterdam was the last port of call in the Zuyder Zee area.<sup>32</sup> After part of the cargo had been unloaded in the small and medium-sized ports, and perhaps a return cargo had been loaded, the ship would sail to Amsterdam to unload the remainder, and take on more return cargo. It was obviously not possible to unload all the cargo and take on return cargo in the other ports; this had to be done in Amsterdam. The fact that so many ships left the Dutch Republic by way of Amsterdam supports the notion that Amsterdam played a key role in the port system. Indeed, not only were there many more imported and exported goods in Amsterdam than in the other towns, there was also a much greater variety. Records for the period 1667-1668 show that products from all over the world were found on the Amsterdam market.<sup>33</sup> Clearly present were luxury goods from southern Europe and dozens of different types of industrial products: imported products which were hard to find in the other ports of the Holland Zuyder Zee coast. Consequently, Amsterdam was the central importing and exporting centre both for the ports in northern Holland and for the whole Zuyder Zee area.

Amsterdam's sphere of influence was not limited to the Zuyder Zee area, but also extended to the southern part of Holland. Still, the ports in the Rhine and Meuse estuary did not find themselves in such a position of dependency as the small and medium-sized ports on the Holland Zuyder Zee coast. Concentration similar to that which had taken place earlier in the Zuyder Zee region did take place in the southern part of Holland, albeit on a smaller scale. During the second half of the sixteenth century, import and export were mainly concentrated in Rotterdam, while the other ports in the region – Schiedam, Delfshaven, Den Briel, Maassluis and Vlaardingen – did have some trade, although herring fishing remained the main activity.<sup>34</sup> The importance of Rotterdam towards the end of the sixteenth century can be seen from the books of the Delft merchant Claes Adriaensz. van Adrichem. He organized fifteen sailings between 1589 and 1598,

ten of which ended in Rotterdam. Delfshaven – the outport of Delft – and the other ports in the estuaries were not called at, neither on departure nor on arrival.<sup>35</sup>

The growth of imported and exported goods in Rotterdam soon caused the town to outstrip Dordrecht at the beginning of the seventeenth century. Table 3, which shows the yield of the *convoeien en licenten*, reflects this process: proceeds in Dordrecht remained behind those of Rotterdam and even diminished in the course of the seventeenth century. This does not mean that Rotterdam had taken over from Dordrecht in all respects. Although its position was affected by the rise of Rotterdam, Dordrecht did keep its central position as far as river trade was concerned.<sup>36</sup>

This rapid expansion of Rotterdam as gateway and the relatively independent development in the delta area did not in any way alter the primacy of Amsterdam. During the period 1589-1595, the yield of the *convoeien en licenten* in Dordrecht and Rotterdam together was half that of Amsterdam, but in the course of the seventeenth century this declined. During the period 1624-1629 the Dordrecht-Rotterdam yield amounted to only 28% of that of Amsterdam, and during 1665-1670 and 1681-1684 it was only 22 and 19% respectively (see table 3). Statistics of the imported and exported goods in Dordrecht and Rotterdam for 1680 show that trade was mainly aimed at England, and that the variety of traded goods was only a fraction of what Amsterdam could offer.<sup>37</sup>

#### 4. *Intraregional trade*

The fact that until well into the fifteenth century the towns and larger villages in Holland traded independently overseas and with the surrounding regions clearly shows that a full-grown port system had not yet developed. It is true that the ports in the estuaries and those on the Holland Zuyder Zee coast were differently orientated, but a functional specialization was still lacking, and there was no clear hierarchical system. Of course, this situation was reflected both in the size and the organization of intraregional trade. Although the main ports in Holland – Dordrecht in the south and Amsterdam in the north – were explicitly mentioned as destinations for inland navigation, they did not play a central role in intraregional trade and shipping. Such centres were still lacking in Holland.

The dominant position which Amsterdam had acquired during the last decades of the fifteenth century, both in overseas trade and in trade with the surrounding regions, had of course consequences for its place and function in intraregional trade. As the exchange of goods concentrated in Amsterdam, the other gateway towns in the region became increasingly dependent on the intraregional exchange of goods with Amsterdam. Cloth, for instance, was primarily exported via Amsterdam, just as some raw materials were imported via this gateway.<sup>38</sup> This is clearly illustrated by the fact that, when direct trade links between Hoorn and

Newcastle were severed, the Amsterdam market supplied the wool which formed the raw material for the Hoorn textile industry.<sup>39</sup> The dominant role of Amsterdam as a port where grain from the Baltic was imported also turned it into the central distribution centre for this product. When trade links between the other gateway towns and grain-exporting regions declined, a large part of Holland came to depend on intraregional grain supplies from Amsterdam.<sup>40</sup> It is not surprising, then, that people in Edam claimed in 1540 that Amsterdam was their 'capital city' (*hooftstede*).<sup>41</sup>

As Amsterdam grew more important as a centre in the intraregional exchange of goods, the limitations of the traditional transport system came to light. Traditionally, the guilds had supervised transport along the inland waterways and municipal authorities had tried to reserve trade and shipping for their own burghers.<sup>42</sup> Transport itself was much like tramp shipping. This meant in practice that there were almost always several shipmasters at the same time waiting for a cargo. Consequently, the cargo was dispersed over several ships, and it could take weeks before a ship would sail. Obviously the master of a ship was inclined to wait until his ship was fully loaded before setting sail, especially for longer passages. The irregular nature of tramp shipping also resulted in the shipmasters exchanging cargo among themselves, so as to keep the passage as short as possible and to avoid detours. However, this caused the charterers to lose all control over the cargo, and it increased their uncertainty as to whether the goods arrived at the place of destination.

It will be clear that this system had its disadvantages both for merchants and other charterers, and that the disadvantages would first come to light in those places where intraregional trade was of great importance. It is not surprising that the route between Amsterdam and Hoorn was one of the first to undergo organizational changes. After all, Amsterdam had become the gateway for a large part of Holland, and in Hoorn the importance of overseas trade and trade with surrounding regions had declined most from the end of the fifteenth century.<sup>43</sup> In a decree drawn up in 1529 concerning trade between these two towns, it was explicitly stated that under the existing system merchandise was often damaged or lost.<sup>44</sup> Regarding the new system the decree makes clear that, apart from Sundays and a (limited) number of holidays, a ship had to leave each port at least once a day. Of great importance is the fact that the shipmaster would have to leave at an assigned time and was therefore not allowed to wait until the ship was fully loaded. To prevent the masters from arguing with each other, and to ensure that ships would also sail on days when the demand for shipping services was low, it was decreed that they had to sail in a fixed order – by taking turns – and at set prices. Finally, it was decreed that charterers were allowed to rent a complete ship outside the set sailing times.

The importance of the *beurtvaart*, as this system of regular services came to be known, should not be underestimated. Sombart correctly calls it a revolutionary

change, 'deren Geist allmählich das gesamte Verkehrswesen der Erde umgestürzt hat'.<sup>45</sup> It can indeed be seen as a first step towards one of the most radical institutional modernizations in the world of transport: maintaining a fixed and regular connection between various points. Over the centuries this system has become standard for passenger transport. As an institutional innovation the *beurtvaart* system did what North views as the most important contribution of institutions to society, 'to reduce uncertainty by establishing a stable [...] structure to human interaction'.<sup>46</sup> The *beurtvaart* gave the charterers a certainty which up till then either had been totally lacking or had only been available for those able to rent a complete vessel. There was now certainty as to the times of departure and arrival, transport costs and the safety of the goods transported. As far the latter was concerned, the shipmasters had to comply with strict requirements set up by municipal authorities concerning their professional skill and the quality of the ferries.<sup>47</sup> At the same time the flexibility of the transport system was improved tremendously by the introduction of regular ferries. It was now possible to send small consignments of goods at relatively little cost to a great number of destinations.<sup>48</sup>

It goes without saying that those who profited most from these changes were the merchants in the towns which were centres of intraregional trade. Besides Amsterdam, Dordrecht was the main centre, as is seen by the number of vessels (140 in 1514). The position of Dordrecht in the intraregional exchange of goods was, however, founded on a different basis from that of Amsterdam. Favoured by the counts of Holland, Dordrecht had traditionally been the main market town for river trade, and, through the so-called *Maasrecht*, was the compulsory port of call for ships entering the Meuse estuary from the open sea. Because of exemptions and other exceptions, this right, starting in the fourteenth century, slowly eroded, and in the long term lost its importance. In sea trade, therefore, Dordrecht could not maintain its position as an important centre.<sup>49</sup> As far as river trade was concerned, things were quite different. In 1355 the count of Holland had decreed that goods which were transported either upstream or downstream had to be unloaded in Dordrecht, and offered for sale there. This staple right, however, was too comprehensive to maintain and in 1541 King Charles V ordered some important changes. From then on, trade along the north-south axis (Baltic Sea area – Amsterdam – Flanders/Brabant) was no longer compelled to call at Dordrecht, while only a small charge was levied on trade from the north (Amsterdam) or the south (Flanders/Brabant) with upstream destinations.<sup>50</sup> The staple right was maintained for the most important goods coming downstream. To summarize, although from 1541 onwards the staple right was significantly limited, nevertheless, as far as products from the German Rhineland and the valley of the Meuse River were concerned, Dordrecht remained an important market and hence a centre for the intraregional exchange of goods.<sup>51</sup>

In the northern part of Holland the restoration and expansion of direct links with overseas markets during the second half of the sixteenth century did not prevent intraregional trade from gaining in importance. The ports on the Holland Zuyder Zee coast acted as intermediaries between their hinterland and the other towns in Holland, notably Amsterdam. These towns supplied goods which were not produced or imported from overseas in sufficient amounts. Among these products we find not only the luxury consumer goods from southern Europe mentioned earlier, but also industrial products, raw materials, wines and of course grain, so necessary for the food supply and the brewing of beer.<sup>52</sup> Intraregional trade not only supplied gateway cities like Medemblik, Enkhuizen, Hoorn, Edam and Monnickendam, but also sent on goods to other towns and villages in Holland. Again Amsterdam was very important. From Enkhuizen, for example, which was dominated by herring fisheries, large amounts of herring were exported overseas by way of Amsterdam.<sup>53</sup> Many of the East Indies products imported in Hoorn and Enkhuizen were also shipped to the Amsterdam market for sale and transshipment.

In the Rhine-Meuse estuary, the gateway function of Rotterdam increased rapidly, but here, too, intraregional trade and transport remained important. After all, many products exported from Rotterdam reached this gateway via inland waterways and, conversely, intraregional trade and transport was used to distribute products imported in Rotterdam. Consequently, because of an increase in its imports and exports, Rotterdam, like Amsterdam and Dordrecht, grew to be an important centre for the intraregional exchange of goods. At the same time it should be taken into account that direct links between the delta area and the surrounding regions as well as overseas were not as extensive and varied in the case of Rotterdam as those of Amsterdam. Rotterdam and the southern part of Holland in general were partly dependent on grain supplies from the Amsterdam grain market. Bijlsma has pointed out that not only grain, but also silk fabrics, raw materials for the soap works and yarn from the German Rhineland for the linen weaving mills of southern Holland were bought in Amsterdam.<sup>54</sup> An additional factor stimulating the use of intraregional transport between the northern and the southern part of Holland was unfavourable wind directions. For the square-rigged merchant vessels it was practically impossible to leave the port of Amsterdam and the Zuyder Zee area when the wind blew from the east, whereas an easterly wind was excellent for setting sail from the Rhine-Meuse delta. So, merchants wishing to send goods to England, France or southern Europe when there was an easterly wind would first send their merchandise along inland waterways to the delta area. After being loaded onto seagoing vessels there, the products were sent to their destination. Conversely, when a westerly wind blew, the port of Amsterdam was better suited, and goods destined for northern and northeastern Europe were then transported along inland waterways from the southern part of Holland to Amsterdam or one of the ports on the Zuyder Zee coast.<sup>55</sup>

It will be clear by now that the specific structure of the Dutch port system and the expanding economy needed a properly functioning intraregional transport system. The regular *beurtvaart* service, which was both reliable and flexible, could meet the demands made and, from the last few decades of the sixteenth century onwards, dozens of regular lines were established by municipal authorities.<sup>56</sup> The system, however, was not quick enough to transport products to the port with the most suitable wind direction, because the large seagoing vessels could not postpone their departure for more than two or three days without running the risk of the wind direction changing. For that reason there was a rowboat link between Amsterdam and Rotterdam, which could bridge the distance between these two towns in a very short time. This speedy connection was used not only for goods but also for messages, such as the daily price quotations on the Amsterdam Bourse.<sup>57</sup>

The regular services of the *beurtvaart* system were not limited to Holland, but were also established to facilitate trade with surrounding regions and with cities like Hamburg, London and Rouen. After the Northern Netherlands had dissociated themselves from the Hapsburg monarchy at the end of the sixteenth century, and after import and export taxes were imposed, trade in the Northern Netherlands became more like domestic trade as we know it nowadays. Since the province of Holland played an important role in the Dutch Republic, the main centres for intraregional trade and transport in Holland – Amsterdam, Dordrecht and Rotterdam – were at the same time main centres for inland trade and traffic in the Dutch Republic. As is shown in figure 2, Amsterdam was the most important centre in the inland trading network. From here, direct regular services were maintained to practically all parts of the country.<sup>58</sup> Besides Amsterdam, there were a few centres which were less important, but which did, at a regional or subregional level, function as centres for domestic trade. The most important of these centres (together with their sphere of influence) are mentioned in figure 3: Dordrecht, Utrecht, Middelburg, Nijmegen, Groningen and Sneek.<sup>59</sup> Of these centres Dordrecht, because of its important role in river trade, had the most extensive sphere of influence. The other centres kept in touch with towns and villages in their region, and, as is made clear in figure 3, they linked the *beurtvaart* system in their region to the big cities in the western part of the country, particularly Amsterdam. Amsterdam therefore came to function as the main intermediary in the exchange of goods between the various parts of the Dutch Republic.

However, the *beurtvaart* system as portrayed in figures 2 and 3 does not give a complete account of domestic trade and transport. Practically all the towns and villages which were included in the *beurtvaart* system were, in turn, centres in a network of domestic trade. This network could be extremely small, in which case it would coincide with the market area of the centre. In a few cases, though, it was very extensive. One large network of inland and foreign links was that around Zwolle. This city, situated on the east coast of the Zuyder Zee, was linked to

Amsterdam by a daily *beurtvaart* service, but was itself an important centre for a trade network reaching across the eastern part of the Netherlands and Münsterland in Germany. Though there were no proper waterways in the area, there was extensive inland shipping on the smaller rivers, streams and ditches whenever the water level allowed. Even if there was not enough water, sailing could take place. The shipmasters would, in this case, build an earthen dam and patiently wait until the water level had risen sufficiently. Then they would cut across the dam and punt downstream as quickly as possible and after some time build a new dam.<sup>60</sup> By means of this primitive transport system, they were nevertheless able to transport large amounts of goods from an extremely vast hinterland to Zwolle. Deep down in this hinterland, towns like Almelo played an important role as traffic and trade centres. A trade register of an Almelo merchant, dating from the first half of the seventeenth century, shows that a large part of Twente was supplied with goods from Almelo. Insofar as these goods came from the west, they were supplied via Zwolle. From Zwolle, too, regional products, such as linen, rye and beef cattle, were shipped to Holland.<sup>61</sup> Confirming Amsterdam's central role in the domestic trade of the Dutch Republic, it was Amsterdam where many of the goods were purchased and sold. The Almelo merchant had a brother and a cousin living in Amsterdam who saw to his affairs there.

Details such as these give some insight into how domestic trade was organized. At the same time they make clear that the regulated *beurtvaart* was only part of an extensive domestic traffic system, a system which functioned extremely well for those days, and which must be taken into account when studying the above-mentioned concentration of import and export activities in a handful of gateway cities. In the following section an attempt will be made to explain the development of the port system and intraregional trade, and how the two are related.

Figure 2. The 'beurtvaart' system of Amsterdam, ca 1700.



Source: Jan ten Hoorn, *Naeuw-keurig Reys-boek bysonderlijk dienstig voor kooplieden, en reysende personen etc.* (Amsterdam 1700).

Figure 3. The 'beurtvaart' system of some regional centres for inland trade and shipping, ca 1700.



Source: Jan ten Hoorn, *Naeuw-keurig Reys-boek byzonderlijk dienstig voor kooplieden, en reysende personen etc.* (Amsterdam 1700).

### *5. The port system and intraregional trade: an explanation*

The developments described in the preceding sections show some striking similarities with the model of selective growth as described in section 2. Various gateway cities in Holland were assimilated into the expanding network of intraregional contacts around Amsterdam (P2 in the model). Besides this, connections with the outside world were increasingly concentrated in one port. From the end of the fifteenth century onwards, a port system started to develop which was both clearly structured and strikingly hierarchical. Not all ports, however, were assimilated into the Amsterdam sphere of influence, something which is also in keeping with Rimmer's model. The way in which Dordrecht developed is similar to that shown in port P4. As Dordrecht had a specific function – a staple function in river trade – it could remain fairly independent of Amsterdam. The extensive fleet of river craft is evidence of the existence of a network of intraregional contacts around Dordrecht.

From the second half of the sixteenth century the import and export activities of a number of ports were restored, but the structure of the port system was not changed. As ports like Hoorn and Enkhuizen had specialized in the import and export of only a few products, intraregional trade in the area north of the IJ remained of vital importance. This specialization bears some resemblance to the process of decentralization as shown in phase 5 of the model. In the Rhine-Meuse estuary, Dordrecht was surpassed by Rotterdam, but here too we can see a form of specialization: Dordrecht concentrated on river trade whereas Rotterdam had sea trade. Although the gateway towns in the delta area could remain reasonably independent of Amsterdam, it should be emphasized that trade relations of a city like Rotterdam were on the whole limited to western Europe and especially to England and France. In this sense, too, there was specialization.

Now that it has been established that Holland went through a process of selective growth which resembles that described by Rimmer, the question remains whether his statements are of any help in interpreting the developments which took place in Holland from the last quarter of the fifteenth century. It has already been mentioned that Rimmer considered unequal means of access to the hinterland as being the cause of selective growth among the ports. The ports which grew most were those which were accessible by means of railway lines and roads, the so-called penetration lines. An external boost, the establishment of settlements along the coast and the creation of an infrastructure, caused the interior of a country to develop, thus starting a process of selective growth among the ports. For developments in Holland, this does not seem to explain much. The interior of the country was not one-sidedly vitalized by the presence of ports along the coast, nor were there any penetration lines built in an otherwise inaccessible area. Unlike Africa and Australia, Holland had, during the Middle Ages and the early modern period, a great number of waterways. Consequently, according to the standards

of the period, the area was remarkably accessible. The process of interconnection and concentration can therefore not be linked to the creation of an infrastructure.

The *Enquete* (1494) and the *Informacie* (1514) show that the crisis in which Holland found itself at the end of the fifteenth century played a crucial role in the developments described above. Like other regions in the Netherlands, Holland suffered a crisis which disrupted the whole of society.<sup>62</sup> The seriousness of the crisis was caused by a number of unfavourable developments at the same time. A structural problem was the high level of the groundwater and frequent floods as a result of dikes bursting. This excess of water had a negative influence on the quality of the soil and therefore on the productivity of agriculture. A further problem for cattle-breeders was that prices of grain (which they had to buy) rose, while prices for cattle-breeding products lagged behind. At the same time political tension increased and, especially after the death of Charles the Bold in 1477, the whole country was in a permanent state of turmoil, due to raids, looting and devastation caused by invading armies and to domestic unrest which found expression in the rebellion of the 'kaas en broodvolk'. The many wars caused taxes to be raised, while trade, shipping and fishing were hampered by pirates. Finally, the people, who had had to suffer so much from turmoil and poverty, were also hit by several outbreaks of the bubonic plague. It is not surprising that the population in Holland decreased drastically during the last quarter of the fifteenth century.

The combination of all these misfortunes was of great influence on the gateway activities of the cities. After all, the economic and demographic decline diminished the exchange of goods with other regions and affected both imports and exports in the gateways. In addition, the merchants in most cities were financially incapable of surviving the consequences of a long-lasting crisis. Their capital was diminished by the taxes that had been raised to pay for the wars following the death of Charles the Bold. They also suffered immediate financial loss through the wars: in a great many towns loss of ships and goods is mentioned.<sup>63</sup> As a consequence of their capital losses, merchants and shipowners could not replace the ships they had lost. Considering the size of these losses, this is hardly surprising: Edam for instance, after the death of Charles the Bold, lost 31 seaworthy vessels, Enkhuizen 135 with all their crew and merchandise.<sup>64</sup> Obviously these towns lost much of their gateway activity because of this.

The limited financial resources of the merchants also affected the gateway function in a more fundamental way. In 1494 Alkmaar representatives emphasized that the merchants in their city were no longer able to buy the farmers' production of butter and cheese. The latter were therefore forced to go and sell their products on the Amsterdam market.<sup>65</sup> This statement is evidence that the economic ties between the towns and the surrounding countryside had loosened. This undermined the activities of the towns as exporting centres for agricultural products

from the surrounding countryside and their function as port of call for products which had to be supplied from elsewhere. Problems were increased because most of the wealthy tended to leave the small and medium-sized towns and settle elsewhere. There were complaints about this both in 1494 and in 1514. In Hoorn in 1494 it was stated that the rich had left the city and had moved to Amsterdam and other places where trade and industry were less affected by the hardships of the time.<sup>66</sup> Representatives of Alkmaar pointed out that while trade and industry in their city were severely hit by the crisis, Amsterdam suffered much less. Not only did Amsterdam suffer less; as will be shown below, the crisis paved the way for Amsterdam to acquire its dominant position during the sixteenth and seventeenth centuries.

There are several explanations for this atypical development. In the first place, Amsterdam had been the main trading centre in the region for some time and its financial strength was undoubtedly greater than that of any other town.<sup>67</sup> Therefore, it was more capable of absorbing financial loss and might even profit from the economic upheaval of the other gateway cities.

In the second place, Amsterdam's gateway function was strengthened by the growing supply of grain from the Baltic area to the Netherlands. Around 1460, grain export from the Baltic to the west was not more than 3,000 lasts (about 6 million kilograms). In 1500 this had increased to 10,000 lasts (about 20 million kilograms) and export figures for Danzig clearly show that this increase in grain exports to the Netherlands mainly took place after 1475.<sup>68</sup> Van Uytven links this increase to a decrease in imports from the traditional grain-supplying areas in France (the Somme and the Loire regions) and lowered production within the Netherlands. Poor harvests because of flooding, devastation caused by war, bans on exports and privateering by the French caused the traditional supply routes to run dry.<sup>69</sup> Because Amsterdam had maintained close links with the Baltic area, and had long been the main port for the import of Baltic products in the Netherlands, it profited from an increase in supplies. Conversely, gateway towns like Dordrecht, Gouda, Delft and Schoonhoven, to which imported grain from France had mainly come, were undermined by this same process.<sup>70</sup>

In the third place it should be mentioned that during this period of crisis and economic upheaval Amsterdam pursued a successful economic policy aimed at concentrating trade and shipping in the city. One example of this is the decisions taken regarding interest still due. When at the end of the fifteenth century many towns and villages could no longer pay the interest on loans in Amsterdam, it was possible to hold the traders from these towns and villages liable for the debts of their home towns and to confiscate their goods. Naturally people then tended to avoid Amsterdam. In order to prevent this situation, which was clearly unfavourable for Amsterdam, residents of all towns and villages in 1494 received letters of safe-conduct to trade in Amsterdam. In following years, this measure was continually renewed.<sup>71</sup>

Finally, the concentration of import and export in Amsterdam was of a self-enhancing nature. It has already been mentioned that the wealthy burghers from other towns settled in Amsterdam from the final decades of the fifteenth century onwards, thus strengthening the economic basis of Amsterdam, and weakening it in other places. The difference between the financial strength of Amsterdam and that of the rest of Holland is confirmed by the yield of a tax on trading capital raised in 1543. Only merchants with a working capital of at least 1,000 guilders were taxed. Amsterdam merchants headed the list with an estimated total of 194,125 guilders. For Delft, Haarlem and Leiden the total was 34,900, 17,500 and 10,900 guilders respectively. Unfortunately there are no figures available for Dordrecht and Gouda, but it is certain that no merchant living north of the IJ had a working capital worth more than 1,000 guilders.<sup>72</sup>

In the previous sections we saw that both the import and export activities of many gateway cities in Holland recovered after the middle of the sixteenth century. It also became clear that this recovery did not, in most cases, lead to a large diversity in the exchange of goods nor to contacts with a large number of areas. On the contrary, the ports in Holland tended to specialize in certain products and in contacts with a limited number of forelands, or foreign destinations. Only the exchange of goods in the port of Amsterdam showed a great diversity. In the Rimmer model, which is based on research in Africa and Australia, capacity problems in the main port (P2) are seen as the driving force for the process of specialization. Such capacity problems are caused by the fact that changes in infrastructure and transport technology more or less force the flow of goods along one or a few places. The construction of a railway link was of crucial importance in the case of Africa and Australia, as it allowed large amounts of goods to be transported along great distances at relatively little cost. This caused an end to the situation whereby primitive means of transport limited the size of the hinterland, and whereby it was necessary to unload or reship in many different ports. The port which was most accessible to the hinterland could thus monopolize trade with the outside world and so acquire a dominant position in domestic trade and shipping. If the total volume of imports and exports grew too much, a gateway city could end up with capacity problems.

During the early modern period in Holland there was no need to concentrate the flow of goods along one or a few places. Here the process of concentration was brought about by the economic crisis at the end of the fifteenth century, which caused the exchange of goods and the financial strength of the merchants in most gateway towns to become insufficient to keep up independent contact with the forelands. With economic recovery in Holland, renewed contacts between gateway towns and other regions became possible again. Besides, decentralization of port activities was boosted by the fact that intraregional transport in Holland was well developed for those days, but a distribution of all goods from one central port

was beyond the system. It is also important to note that technical and financial factors did not prevent a decentralization of port activities. After all, seaworthy vessels were relatively small and had a shallow draught, making it possible to keep the ports reasonably accessible using simple techniques at relatively little expense.<sup>73</sup>

When the economy recovered during the second half of the sixteenth century and the exchange of goods increased, the intermediary function of the ports was indeed reinforced. As to the independent links with surrounding regions and overseas markets, it has already been stated that in the ports to the north of the IJ this was mainly limited to a small number of goods. There was too little demand from the immediate hinterland to justify an increase in supplies. In addition, the financial resources of the merchants in these towns and villages were small compared to those of the merchants in Amsterdam, so they could not turn their towns into important staple towns. Thus, the activities of these towns and villages in the interregional and international exchange of goods were mainly limited to the supply of bulk goods and the export of voluminous products from their immediate hinterlands. With bulk goods and other voluminous products, the limits of the intraregional transport system became most apparent. The import and export of goods from one central point necessitates temporary storage and several transfers of the goods. At a time when there were few mechanical appliances in the ports, these activities were expensive and consequently unattractive. With products which were less bulky (industrial products, luxury goods) these problems were not so great, and for these types of goods the towns north of the IJ remained dependent on intraregional transport.

A similar situation is found in the Rhine-Meuse delta. However, an exception has to be made for the main ports in the area, Rotterdam and Dordrecht. Because of their location and for reasons of tradition, these ports had a natural advantage in some trades. For Dordrecht this advantage lay in its location and its traditional staple function for river trade; for Rotterdam it lay in its favourable location in relation to England and France. As a consequence, import and export were not limited to goods unsuitable for intraregional trade. Because of these factors, Rotterdam and Dordrecht succeeded in becoming centres for intraregional trade themselves.

The hierarchical structure of the port system described above changed little in the course of time. When entrepreneurs had to decide on a location, the best-developed gateway cities were the most attractive, as was the case during the crisis at the end of the fifteenth century. This was made abundantly clear by the arrival of immigrant merchants from the Southern Netherlands during the last decades of the sixteenth and the first decades of the seventeenth century. Only incidentally did a merchant from the Southern Netherlands settle in any of the gateway cities to the north of the IJ. They did settle in the Rhine-Meuse delta; Rotterdam's trade in particular seems to have been given a great boost by their arrival.<sup>74</sup> The largest

number of merchants from the Southern Netherlands, however, went to the most important gateway city in Holland: Amsterdam. Through their capital, know-how and trade contacts, they gave an even bigger boost to the predominance Amsterdam had over the other ports.<sup>75</sup> When deciding where to settle, the geographical location of a port was of relatively little importance. Towards the end of the seventeenth century, after observing Dutch ports, William Temple correctly stated that, 'it easily appears, that 'tis not a Haven that draws Trade, but Trade that fills a Haven, and brings it in vogue'.<sup>76</sup> As a consequence, there was no change in the position of the gateway cities in the network of intraregional and domestic links.

### 6. Conclusion

In the preceding sections, the spatial and organizational development of the network of intraregional trade and shipping has been described. During the period under discussion, the fifteenth up to and including the seventeenth centuries, some fundamental changes took place. Most striking is the fact that three cities, Amsterdam, Dordrecht and Rotterdam, acquired a dominant position in the network of intraregional contacts. Of these, Amsterdam was by far the most important centre. Frequent connections were maintained with all parts of Holland and at the same time with a large number of places in the surrounding regions. When at the end of the sixteenth century Holland and a number of these surrounding regions were united in the Dutch Republic, Amsterdam became the main centre of what from then on may rightly be called 'domestic' trade and transport. The extensive intraregional and domestic trade demanded organizational changes in inland shipping which for a long time had been more in the nature of tramp shipping. The *beurtvaart* – characterized by regularity, set times of departure, fixed rates and guarantees as to the professional skill of the shipmasters and the quality of the ships – met the wishes of merchants and other charterers. It gave the transport system a flexibility which until then was unheard of. The towns that had been admitted into this system of regular services were, in turn, centres for their own networks of regional or subregional links.

In order to interpret these spatial and organizational changes, a model has been used in which a link is made between the development of intraregional connections and the changing structure of the port system. It is argued that it was its intermediary function between a hinterland and the rest of the world which determined the position of a city in the network of intraregional trade and shipping. The similarity between the model and concrete developments in Holland indicate that the port system and intraregional trade and shipping are linked in a way which depended little on time and place. In Holland, too, selective growth among gateway cities was directly linked to intraregional and domestic trade and shipping. Regarding the causality, there is much less similarity between the model and

developments in Holland. While the model shows how development in a port system depends on the creation of an infrastructure in the interior, in Holland selective growth within the port system influenced the development of an intraregional network. To explain this difference it is noted that the starting point for Holland was quite different from that described in the model. In Africa and Australia, the areas studied in making the model, an interior which had been hitherto inaccessible was opened up by the creation of an infrastructure. Holland, with its abundance of waterways, had, according to the standards of the period, already been opened up, so that it is not the creation of an infrastructure, but political and economic changes which have to be held responsible for the selective growth among ports.

The analysis of intraregional trade and shipping presented here allows for some tentative remarks on its importance for economic development in Holland. The most important contribution a well-functioning intraregional transport system can make to a regional economy is that it allows specialization on a local and subregional level. Indeed, in Holland the economy was characterized by a large degree of geographical specialization. In the seventeenth century Leiden was the textile town, Delft and Gouda specialized in the production of earthenware, in the vicinity of Haarlem linen was bleached, in Weesp brandy was distilled, and the Zaan area had developed into an industrial area where windmills supplied energy for a large number of industrial activities. Ports specialized as well. Because of an intraregional transport system the inhabitants of these cities could fall back on other centres for the goods they themselves did not produce, and for the sale of their own produce.

This kind of specialization in Holland was tremendously important, for, given the small size of production and exchange of goods during the early modern period, it was only possible to profit from economies of scale by geographically concentrating economic activities. It may also be expected that the concentration of specific economic activities facilitated innovations in the production of goods and services. Towards the end of the seventeenth century, William Temple mentions these links. In his *Observations upon the United Provinces* he stated that the economic power of the Dutch Republic was partly caused by 'the custom of every Town affecting some particular Commerce or Staple, valuing it self thereupon, and so improving it to the greatest height'.<sup>77</sup> The existence of a properly functioning intraregional transport system was a precondition for specialization and its positive effects on the economy.

Table 1. *Value of the exported goods in the gateways of Holland according to destination (in percentages of total export in each gateway), 10 february - 10 august 1545*

Destination	Hoom		Monn'dam		Haarlem		Schiedam		R'dam		Dordrecht		
	Enkhuizen		Edam		A'dam		Gouda		Delfsh.		Schoonh.	Gorkum	
Baltic area	17.6	5.8	-	-	14.6	0.4	-	-	100.0	.	.	2.1	-
Norway	2.0	8.1	-	11.0	3.7	3.6	-	-	-	.	.	-	-
Kleine Oost*	7.9	-	-	24.4	4.5	-	-	-	-	.	.	-	-
Friesland	-	32.8	-	10.8	3.4	5.9	16.2	-	-	.	.	0.2	-
Groningen	-	-	-	-	0.8	-	-	-	-	.	.	-	-
Overijssel	45.9	49.6	69.9	30.1	4.1	1.8	71.3	-	-	.	.	-	1.1
Gelderland	-	-	-	-	0.1	-	-	-	-	.	.	-	6.8
German Rhineland	4.8	-	-	-	2.0	-	-	-	-	.	.	4.4	84.3
'West' not spec.	-	-	-	21.4	0.0	85.5	-	-	-	.	.	-	-
Great Britain	5.9	1.7	-	-	0.1	2.8	-	100.0	-	.	.	81.8	-
Meuse valley (Liège)	-	-	-	-	1.1	-	-	-	-	.	.	-	6.5
France	-	-	-	-	-	-	-	-	-	.	.	10.7	-
Spain	-	-	-	-	0.2	-	-	-	-	.	.	0.8	-
Portugal	-	-	30.1	-	1.9	-	-	-	-	.	.	-	-
Mediterranean	-	-	-	-	-	-	-	-	-	.	.	-	-
Westafric. Islands	-	-	-	-	-	-	-	-	-	.	.	-	-
Unknown	15.9	2.0	-	2.3	63.5	-	12.5	-	-	100.0	100.0	-	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Value (Hfl)**		1509		852		10804		940		469		20954	
	3928		5975		250.000		1699		1715		604		32104

\* The term *Kleine Oost* was used to indicate to German and Danish Northsea coastal area.

\*\* The total value of the goods exported in Amsterdam is an estimation based on a sample of every eighth entry in the chronological register during the period mentioned before.

Source: General Record Office Brussels, Rekenkamer, inv.nrs. 23364, 23390-23391, 23399-23400, 23403, 23405, 23407-23408, 23416, 23420-23422.

Table 2. *Value of the exported goods in the gateways of Holland according to product groups (in percentages of total export in each gateway), 10 february - 10 august 1545*

Product		Hoom		Monn'dam		Haarlem		Schiedam		R'dam		Dordrecht		
		Enkhuizen		Edam		A'dam		Gouda		Delfsh.		Schoonh.		Gorkum
group	I	48.8	55.8	-	48.0	7.3	2.8	3.5	100.0	100.0	1.7	1.7	1.2	31.4
group	II	1.4	8.6	30.1	2.9	15.1	6.5	-	-	-	-	9.9	20.6	0.1
group	III	-	3.6	-	-	14.2	2.8	-	-	-	2.6	56.6	11.7	4.1
group	IV	43.4	1.5	-	14.8	8.9	5.9	72.3	-	-	3.7	17.4	8.5	59.0
group	V	-	16.6	69.9	8.5	5.3	8.4	-	-	-	19.8	-	29.2	-
group	VI	-	-	-	1.7	1.4	-	20.1	-	-	32.6	6.6	14.8	0.1
group	VII	-	-	-	-	0.6	0.9	-	-	-	-	-	-	0.8
group	VIII	0.5	11.6	-	4.2	33.7	71.8	4.1	-	-	-	-	9.2	-
group	IX	5.9	2.3	-	19.9	12.8	0.9	-	-	-	39.6	7.8	4.8	1.9
Unknown		-	-	-	-	0.7	0.1	-	-	-	-	-	-	2.6
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of products*		12	22	2	16	190	22	8	1	1	11	12	41	15
Value (Hfl)**			1509		852	10804		940			469		20954	
		3928		5975		250000		1699		1715		604		32104

The classification of the products employed by Johansen has been used: Group I: Food and live animals; Group II: Vegetable food; Group III: Beverages, spices and tobacco; Group IV: Crude inorganic materials; Group V: Wood and articles of wood; Group VI: Fuels and metals; Group VII: Hides and skins; Group VIII: Textiles, cloth and clothing; Group XI: Other goods.

\* Indications as 'kramerijen' are counted for only one product.

\*\* For the export in Amsterdam compare the note with table 1.

Source: General record Office Brussels, Rekenkamer, inv.nrs. 23364, 23390-23391, 23399-23400, 23403, 23405, 23407-23408, 23416, 23420-23422.

Table 3. *Yield of the convoien en licenten (and index 1589-1595=100) in some tax collecting offices of the Admiralty\*, 1589-1684*

	1589-1595	1624-1629	1665-1670	1681-1684
<b>HOLLAND ZUYDERZEE COAST</b>				
Amsterdam	320958 (100)	729070 (227)	715199 (223)	1027876 (320)
Enkhuizen	37879 (100)	72020 (190)	26102 (69)	38473 (102)
Hoorn	17344 (100)	23368 (135)	32282 (186)	22896 (132)
Medemblik	2878 (100)	3938 (137)	4294 (149)	4606 (160)
Edam	1391 (100)	3338 (240)	2939 (211)	3139 (226)
Monnickendam	395 (100)	3005 (761)	1363 (345)	1131 (286)
<b>RHINE-MEUSE ESTUARY</b>				
Dordrecht	84071 (100)	83637 (99)	42798 (51)	40010 (48)
Rotterdam	74468 (100)	123707 (166)	117536 (158)	160317 (215)

\* For the following years data are missing: Amsterdam 1627; the other gateways on the Holland Zuyderzee coast 1589-1592, 1626, 1628 en 1681; Rotterdam 1595, 1626, 1627 en 1629; Dordrecht 1595, 1626, 1627, 1629, 1666 and 1670. The yields in Enkhuizen and Hoorn are inclusive the dues of the Dutch East-India Company.

Source: H.E. Becht, *Statistische gegevens betreffende den handelsomzet van de Republiek der Vereenigde Nederlanden gedurende de 17e eeuw (1579-1715)*, 's-Gravenhage, 1908, appendices and Gemeentearchief Amsterdam, archief 5030, inv.nr.70.

Table 4. *Ships entering the ports of Hoorn, Medemblik and Edam according to region of departure*

	Hoorn (1681)	Medemblik (1685)	Edam (1677)
Baltic Area	5 (3%)	1 (3%)	3 (2%)
Norway	51 (30%)	21 (53%)	4 (2%)
Kleine Oost	69 (41%)	3 (8%)	132 (82%)
'West' not specified	-	1 (3%)	-
Great Britain	2 (1%)	5 (12%)	4 (2%)
France	8 (5%)	3 (8%)	2 (1%)
Portugal	7 (4%)	-	-
Italy	3 (2%)	-	-
elsewhere	-	-	-
whalers	23 (14%)	3 (8%)	8 (5%)
unknown	-	2 (5%)	9 (6%)
total	168 (100%)	39 (100%)	163 (100%)

Source: Oud Archief Enkhuizen, inv.nrs. 110d, 110e en 110g.

## NOTES

- \* I would like to thank dr. M.H.D. van Leeuwen and the editors for their comments on an earlier version of this article.
- 1 P. de la Court, *The true interest and political maxims of the Republic of Holland, London, 1746* (First published in 1662 (in Dutch); enlarged and revised in 1669; reprinted New York (Arno Press) 1972).
  - 2 Practically all existing literature is mentioned in L. Noordegraaf, 'Domestic trade and domestic trade conflicts in the Low Countries; Autonomy, Centralism and State-formation in the Pre-industrial Era', S. Groenvelde & M. Wintle (eds), *State and Trade; Government and the economy in Britain and the Netherlands since the middle ages* (Zutphen 1990) 12-27; J.C. Boyer, *L'évolution de l'organisation urbaine des Pays-Bas* (Paris 1978) contains a few brief but interesting passages on domestic trade and transport in the Northern Netherlands during the early modern period.
  - 3 For the use of the terms 'hinterland' and 'foreland', see G.G. Weigend, 'Ports: their hinterlands and forelands', *Geographical Review* 42 (1952) 660-662.
  - 4 The market function of towns for the surrounding countryside is dealt with extensively in C.M. Lesger, *Hoorn als stedelijk knooppunt; Stedensystemen tijdens de late middeleeuwen en vroegmoderne tijd* (Hilversum 1990; Hollandse Studiën 26) en C.M. Lesger, 'Hiërarchie en spreiding van regionale verzorgingscentra; Het centrale plaatsensysteem in Holland benoorden het IJ omstreeks 1800', *Tijdschrift voor Sociale Geschiedenis* 16 (1990) 128-153.

- 5 Ports are the best examples of such centres, but the intermediary function is of course not limited to them.
- 6 By a port system in this article a group of ports is meant which influence each other in such a way that a change affecting one port will make itself felt in the others.
- 7 See E.J. Taaffe, R.L. Morrill & P.R. Gould, 'Transport expansion in underdeveloped countries; A comparative analysis', B.S. Hoyle (ed.), *Transport and development* (London 1973; first published 1963) 19-31 and P.J. Rimmer, 'The search for spatial regularities in the development of Australian seaports, 1861-1961/62', B.S. Hoyle (ed.), *Transport and development* (London 1973; first published 1967) 63-86.
- 8 For port developments in the Rhine-Meuse estuary, see Z.W. Sneller, 'Handel en verkeer in het Beneden-Maasgebied tot het eind der zestiende eeuw', *Nederlandsche Historiebladen* 2 (1939) 341-373 and J. de Vries, *Amsterdam-Rotterdam; Rivaliteit in economisch-historisch perspectief* (Bussum 1965).
- 9 See for instance H.A. Poelman (ed.), *Bronnen tot de geschiedenis van den Oostzee-handel* ('s-Gravenhage 1917; R.G.P. 35, 36) numbers 1837, 1849, 1850.
- 10 For the rise of the Amsterdam graintrade and links with the Baltic, see W.S. Unger, 'De Hollandsche graanhandel en graanhandelspolitiek in de middeleeuwen', *De Economist* (1916) 243-269, 337-386, 461-507; F. Ketner, *Handel en scheepvaart van Amsterdam in de vijftiende eeuw* (Leiden 1946) and N.W. Posthumus (ed.), *De Oosterse handel te Amsterdam; Het oudst bewaarde koopmansboek van een Amsterdamse vennootschap betreffende de handel op de Oostzee, 1485-1490* (Leiden 1953).
- 11 Cited in Ketner, *Handel en scheepvaart*, 126.
- 12 See illustrative map in Z.W. Sneller, 'Deventer, die Stadt der Jahrmärkte', *Pfingstblätter des Hansischen Geschichtsvereins* 25 (1936).
- 13 Calculation based on Kamper Pondtolregister as published by H.J. Smit (ed.), 'Het Kamper pondtolregister van 1439-1441', *Economisch-Historisch Jaarboek* 5 (1919) 209-296.
- 14 Rotterdam, although not mentioned in the Kamper Pondtol, did maintain contact with the IJssel area. Leyden, for the sale of cloth in Deventer, had its own 'staple house' at its disposal (see Z.W. Sneller, 'Rotterdamse poorters te Deventer en Wilsnack, anno 1430', Z.W. Sneller (ed.), *Rotterdams bedrijfsleven in het Verleden* (Amsterdam 1940) 3-4).
- 15 R. Fruin (ed.), *Enqueste ende Informatie upt stuck van der reductie ende reformatie van den schiltaelen, voertijts getaxeert ende gestelt geweest over de landen van Hollant ende Vrieslant, gedaen in den jaere MCCCCXCIII* (Leiden 1876). Even a small town like Vlaardingen appears to have been involved in the import of grain from the Baltic. Participation in overseas trade on a large scale is evidenced by the large index of source material by Poelman (ed.), *Bronnen Oostzeehandel*; H.J. Smit (ed.), *Bronnen tot de geschiedenis van den handel met Engeland, Schotland en Ierland* ('s-Gravenhage 1928-1950; R.G.P. 65, 66, 86 en 91) and Z.W. Sneller & W.S. Unger (eds), *Bronnen tot de geschiedenis van den handel met Frankrijk* ('s-Gravenhage 1930-1942; R.G.P. 70 and supplement).
- 16 Compare the summarizing tables by Ketner, *Handel en scheepvaart*, 27-59, and also 140. As the towns in the southern part of Holland were less involved in export to the IJssel area, it may not, by virtue of these data, be concluded that the supply of goods in Amsterdam was larger than that in Dordrecht.

- 17 R. Fruin (ed.), *Informacie up den staet faculteyt ende gelegentheyt van de steden ende dorpen van Hollant ende Vrieslant om daerna te regulieren de nyeuwe schiltale, gedaen in den jaere MDXIV* (Leiden 1866) and Fruin (ed.), *Enqueste*. This concerns the number of vessels in Hoorn, Enkhuizen, Medemblik, Monnickendam, Edam, Schiedam, Gouda and Schoonhoven.
- 18 See Lesger, *Hoorn*, 50-56.
- 19 N.W. Posthumus, *De geschiedenis van de Leidsche lakenindustrie* (Den Haag 1908) I: 257-258.
- 20 L. Noordegraaf, *Hollands Welvaren?; Levensstandaard in Holland 1450-1650* (Bergen 1985), 81.
- 21 For the lists of numbers of hearths, Fruin (ed.), *Informacie*, 629-638.
- 22 Fruin (ed.), *Informacie*, 520. For the types of vessels during this period, see Posthumus, *De Oosterse handel*, 96-108.
- 23 Fruin (ed.), *Enqueste*. The towns are Hoorn, Enkhuizen, Medemblik, Schagen, Alkmaar, Monnickendam, Edam, Weesp, Schoonhoven and Heusden. Similar data for 1514 are not available.
- 24 Fruin (ed.), *Informacie*, 182 and 520.
- 25 For an extensive introduction on the levy see N.W. Posthumus, *De uitvoer van Amsterdam, 1543-1545* (Leiden 1971) ch. I.
- 26 See Posthumus, *De uitvoer*, 232 for supply towards the end of the fifteenth century. The number of 250 products quoted by Posthumus for around 1545 is inflated because of the very exact indications of products in the Amsterdam registers.
- 27 A clear example of this is the conflict with the towns in North Holland and Friesland on the levying of *paalgeld* (a tax on imports). On this conflict see P. Henderikx, 'Het geschil tussen Amsterdam en Friesland over de heffing van het paalgeld (1551-1561)', *Holland 2* (1970) 129-139.
- 28 These percentages are even inflated by the fact that yields in Enkhuizen and Hoorn are inclusive of the VOC (Dutch East India Company) dues, and those in Amsterdam exclusive. VOC dues for the period 1665-1670 were 39% in Hoorn and 25% in Enkhuizen, of the total yield. Unfortunately, for other periods this kind of information is not available.
- 29 Information as in table 4 is not available for Enkhuizen, but for an impression of the area of trade, see R.T.H. Willemsen, *Enkhuizen tijdens de Republiek; Een economisch-historisch onderzoek naar stad en samenleving van de 16e tot de 19e eeuw* (Hilversum 1988) table III.6.
- 30 See Willemsen, *Enkhuizen*, 77ff for Enkhuizen and Lesger, *Hoorn*, 27-38 for Hoorn.
- 31 Willemsen, *Enkhuizen*, 79 and table III.6 and Lesger, *Hoorn*, 36 and table 3.6.
- 32 C.M. Lesger, 'Amsterdam, Harlingen and Hoorn; Port functions in the Zuiderzee region during the middle of the seventeenth century', W.G. Heeres *et al.* (eds), *From Dunkirk to Danzig; Shipping and trade in the North Sea and the Baltic 1350-1850* (Hilversum 1988) 331-360.
- 33 H. Brugmans (ed.), 'Statistiek van den in- en uitvoer van Amsterdam, 1 oktober 1667- 30 september 1668', *Bijdragen en Mededelingen van het Historisch Genootschap* 19 (1898) 125-183. The list mentions about 290 different imported products and about 390 different exported products.

- 34 Sneller, 'Handel en verkeer'; T.S. Jansma, 'De betekenis van Dordrecht en Rotterdam omstreeks het midden der zestiende eeuw', *Tekst en Uitleg* (Den Haag 1974) 146-177 and J.P. Sigmond, *Nederlandse zeehavens tussen 1500 en 1800* (Amsterdam 1989) 73-92. In Rotterdam, too, herring fisheries, until the second half of the sixteenth century, were the basis of the local economy.
- 35 Besides Rotterdam (10 arrivals), ships were unloaded in Amsterdam (3 arrivals) and Zeeland (2 arrivals). See P.H. Winkelman (ed.), *Bronnen voor de geschiedenis van de Nederlandse Oostzeehandel in de zeventiende eeuw* ('s-Gravenhage 1981; R.G.P. 178) III: 534-537.
- 36 P.W. Klein, *De Trippen in de 17e eeuw; Een studie over het ondernemersgedrag op de Hollandse stapelmarkt* (Assen 1965) 79.
- 37 Compare the list in N.W. Posthumus (ed.), 'Statistiek van den in- en uitvoer van Rotterdam en Dordrecht in het jaar 1680', *Bijdragen en Mededelingen van het Historisch Genootschap* 34 (1913) 529-537 with that in Brugmans (ed.), 'Statistiek Amsterdam'.
- 38 On Leiden cloth see Posthumus, *Lakenindustrie*, I: 257-258. From the account book of Symon Reyersz. and Reyer Dirksz. it appears that during the period 1485-1490 large quantities of Hoorn cloth were shipped from Amsterdam to the Baltic (Posthumus, *De Oosterse handel*, 228). Also see the large quantities of Holland cloth in Amsterdam exports in 1544 and 1545 (Posthumus, *De uitvoer*, appendix D).
- 39 Lesger, *Hoorn*, 58.
- 40 An impression of the size of the Amsterdam grain market compared with that of other towns in North Holland can be had from an inventory of grain supplies in 1556. In Amsterdam in November of that year, 7,000 lasts of grain had been stored; in Haarlem, Enkhuizen, Hoorn, Edam, Monnickendam, the villages in North Holland and the Gooi, a total of not more than 1,268 lasts (D. Graswinkel (ed.), *Placcaten, Ordonnantien ende Reglementen, op 't stuck vande lijftocht* (Leiden 1651) 41-48).
- 41 Cited in Sneller, *Deventer*, 68.
- 42 For the development of inland navigation, see J.M. Fuchs, *Beurt en wagenveren* (Den Haag 1946) ch. 1 in particular.
- 43 Compare figures in Fruin (ed.), *Enquete* on the number of seaworthy vessels and vessels suitable for inland navigation in the towns in Holland in 1477 and 1494.
- 44 J.G. van Dillen (ed.), *Bronnen tot de geschiedenis van het bedrijfsleven en het gildewezen van Amsterdam 1512-1672* ('s-Gravenhage 1929) I: number 149.
- 45 W. Sombart, *Der moderne Kapitalismus* (München/Leipzig 1924) II: 353.
- 46 D.C. North, *Institutions, institutional change and economic performance* (Cambridge 1990) 6. North (page 4) defines institutions as 'any form of constraint that human beings devise to shape human interaction'.
- 47 Fuchs, *Beurt en wagenveren*, ch. IV.
- 48 For the sake of completeness it is necessary to point out that the *beurtvaart* was not without friction. As the system was based on voluntary bilateral agreements between towns, and each town strove to favour its own burghers, in practice there was an endless stream of protests and arguments, the results of which can be found in practically all town archives.
- 49 For the development of Dordrecht, see in particular Sneller, 'Handel en verkeer', 345-349 and 357-364.

- 50 Because of the recognition charge the Dordrecht staple right was acknowledged, but the products no longer had to be unloaded and offered for sale in the town.
- 51 For the connection between Dordrecht and the Meuse valley, see T.L.M. Thurlings, *De Maashandel van Venlo en Roermond in de 16e eeuw, 1473-1572* (Amsterdam 1949).
- 52 For examples see Lesger, *Hoorn*, 32-34, 38-40, and Lesger, 'Amsterdam, Harlingen and Hoorn' for intraregional supply of wine and grain in the Zuyder Zee coastal towns. It is striking that, as far as grain imports are concerned, Hoorn and Enkhuizen were intensively involved in trade with the Baltic, but relatively little grain was imported from the Baltic via these ports. These direct supplies were by no means sufficient to provide these ports and their hinterland with grain. Additional supplies from the Amsterdam grain market were required. Furthermore, fairly large supplies of grain (especially rye) were probably imported from the eastern part of the Netherlands.
- 53 Willemsen, *Enkhuizen*, table III.3.
- 54 R. Bijlsma, *Rotterdams Welvaren 1550-1650* ('s-Gravenhage 1918) 108-125 and also Z.W. Sneller, 'De stapel der Westfaalsche linnens te Rotterdam, 1669-1672', Z.W. Sneller (ed.), *Rotterdams bedrijfsleven in het Verleden* (Amsterdam 1940) 64-106.
- 55 R. Bijlsma, 'De opkomst van Rotterdams koopvaardij', *Bijdragen tot de Vaderland-sche Geschiedenis en Oudheidkunde* 5e reeks (1) (1913) 80-82.
- 56 Fuchs, *Beurt en wagenveren*, 72.
- 57 Bijlsma, 'Rotterdams koopvaardij', 81.
- 58 Figures 2 and 3 are based on the *Reys-boek* by Jan ten Hoorn, published in 1700, which gives a survey of all *beurtvaart* services in the Dutch Republic (J. ten Hoorn, *Nauw-keurig Reys-boek bysonderlijk dienstig voor kooplieden, en reysende personen etc.* (Amsterdam 1700)). These also included towing barges. As these barges were almost exclusively used for the transport of passengers, these data have been left out. For towing barges and passenger transport, see J. de Vries, *Barges and capitalism; Passenger transportation in the Dutch economy, 1632-1839* (AAG *Bijdragen* 21 (1978)/Utrecht 1981).
- 59 To prevent the map from becoming too confusing, the Rotterdam *beurtveer* has been left out. It was less extensive than the Dordrecht one, but covered roughly the same area.
- 60 For a detailed description of this 'sailing without water' see G.J. Schutten, *Varen waar geen water is* (Hengelo 1981). For inland navigation in this area, see also F.C. Berkenvelder, 'Overnachtingen in Zwolle, oktober 1673-mei 1674', *Verlagen en Mededelingen van de Vereeniging tot beoefening van Overijsselsch Regt en Geschiedenis* 83 (1968) 48-114.
- 61 See G.J.ter Kuile, 'Een coopman tot Almeloe in 1600', *Verlagen en Mededelingen van de Vereeniging tot beoefening van Overijsselsch Regt en Geschiedenis* 55 (1939) 74-86.
- 62 For a detailed analysis of this crisis in the Netherlands, see R. van Uytven, 'Politiek en economie: de crisis van de late XVe eeuw in de Nederlanden', *Belgisch Tijdschrift voor Filologie en Geschiedenis* 53 (1975) 1097-1149; for the situation in North Holland, see A.M. van der Woude, *Het Noorderkwartier; Een regionaal historisch onderzoek in de demografische en economische geschiedenis van westelijk Neder-*

*land van de late middeleeuwen tot het begin van de negentiende eeuw* (AAG *Bijdragen* 16 (1972)/Utrecht 1972) 350-361.

- 63 Fruin (ed.), *Enquete*. Loss of vessels and merchandise through acts of war were mentioned in Hoorn, Naarden, Rotterdam and Vlaardingen, among others.
- 64 Fruin (ed.), *Enquete*, 24 and 100.
- 65 Fruin (ed.), *Enquete*, 44.
- 66 Fruin (ed.), *Enquete*, 16.
- 67 In 1494 it was mentioned that Amsterdam merchants were selling their possessions, thus maintaining their trading capital (Fruin (ed.), *Enquete*, 119).
- 68 See J. de Vries, *The Dutch rural economy in the Golden Age, 1500-1700* (New Haven/Londen 1974) 71, and also Van Uytven, 'Politiek en economie', 1111.
- 69 Van Uytven, 'Politiek en economie', 1111-1125.
- 70 Gouda stated that around 1477 grain was imported from France in 30 boyers and that the number of vessels in 1494 had dropped to 5 or 6 (Fruin (ed.), *Enquete*, 178).
- 71 I. Prins, *Het faillissement der Hollandse steden; Amsterdam, Dordrecht, Leiden en Haarlem in het jaar 1494* (Amsterdam 1922) 27 and Posthumus, *De Oosterse handel*, 63.
- 72 P.A. Meilink (ed.), 'Gegevens aangaande bedrijfskapitalen in den Hollandschen en Zeeuwschen handel in 1543', *Economisch-Historisch Jaarboek* 8 (1922) 263-264.
- 73 Silting up of the port was the biggest problem faced by municipal authorities in Holland. By building dams, which were intended to promote the natural flow, and by dredging the ports, they usually succeeded in dealing with this problem. The many complaints in the eighteenth century about the ports silting up are, in my opinion, more a consequence of postponing maintenance at a time of economic decline and loss of activity in a number of ports, than a cause of decline and loss of activity.
- 74 Bijlsma, 'Rotterdams koopvaardij', 82-86.
- 75 See the classic article by J.C. Westermann, 'Beschouwingen over de opkomst en den bloei des handels in de Gouden Eeuw', A.E. d'Ailly (ed.), *Zeven eeuwen Amsterdam* (Amsterdam u.d.) II: 65-120 and also J.G.C.A. Briels, *De Zuidnederlandse immigratie in Amsterdam en Haarlem omstreeks 1572-1630* (n.p. 1976) for the arrival of immigrants from the Southern Netherlands in Amsterdam.
- 76 W. Temple, *Observations upon the United Provinces of the Netherlands* (London 1673; reprinted Oxford 1972) 108.
- 77 Temple, *Observations*, 116.



# X

## FOREIGN TRADE OF THE DUTCH REPUBLIC IN THE SEVENTEENTH CENTURY

by

*J. Thomas Lindblad*

### *1. Introduction*

There is something strange about the foreign trade of the Dutch Republic during its Golden Age, the seventeenth century. All agree that successful performance in foreign trade lay at the very core of the affluence enjoyed and the power exercised by the Republic at this time. Indeed, the heavy concentration on commerce continued to form a unique feature of Dutch economy in centuries to come, a feature which has been applied to explain why industrialization was so slow in coming to the Netherlands and even why the Dutch resented the decolonization of Indonesia so much.<sup>1</sup> Yet our knowledge of what Dutch foreign trade actually looked like during the seventeenth century remains uncertain and vague for want of a good statistical base. We cannot rely on detailed documentation such as is (with all its shortcomings) available for the nineteenth and twentieth centuries. Specifications of exports and imports are only given for an occasional year and port.<sup>2</sup> In short, we are asked to believe in the supremacy of Dutch foreign trade during the seventeenth century, within the economy of the Republic and also compared to other trade, without being able to support the argument with hard figures.

This contribution has a threefold aim. We start out with a review of the recent historiography on the foreign trade performance of the seventeenth-century Republic, including Israel's monumental monograph on the worldwide primacy of Dutch trade.<sup>3</sup> We then proceed to explore the analytical potentials of the sole running series of quantitative data available, the so-called *convoien en licenten* (revenues from export and import duties levied by the States-General throughout the time of the Republic). In that context we will also touch very briefly upon the Mediterranean and Asiatic branches of trade. Finally, we will take a closer look

at trade with the Baltic region, the branch of trade that is traditionally held to have constituted the backbone of Dutch commercial success during the Golden Age. The most relevant statistical information is brought together in two appendices. It must be stressed, however, that limitations of space and paucity of precise data preclude a final assessment or full treatment of this large and intriguing topic. What this article offers is an impression of the current state of scholarship, thus also conveying an invitation for others to follow.

## *2. Rise and fall of a trading nation*

The spectacular emergence of the Northern Netherlands as a dynamic force in the European economy shortly after independence impressed contemporaries and later historians alike, but few satisfactory explanations for this phenomenon ensued. Can we trace it all back to a comparative advantage in terms of geographical location and a lead in maritime technology, the latter being exemplified by the famous *fluytschip* of 1595? Or, more generally, was Dutch economic success in the seventeenth century merely the exception confirming the rule: a growth path made possible by stagnation elsewhere? Van Zanden rightly stresses that our inquiry ought to be addressed to the roots and causes of the transition from backwardness to growth between the sixteenth and seventeenth centuries.<sup>4</sup> But in order to do so we need to properly understand the strengths and weaknesses of Dutch commerce that determined both the ascendancy and the decline of the Republic as a trading nation. We will look at both conventional wisdom as laid down in handbooks, and the provocative conception presented by Israel.

Surveys of Dutch foreign trade during the seventeenth century have been incorporated into handbooks on several occasions since 1960: in Van Dillen's *Van rijkdom en regenten* (1970), and in the relevant volumes of the *Maritieme Geschiedenis der Nederlanden* (1977) and the *Algemene Geschiedenis der Nederlanden [AGN]* (1979-1980).<sup>5</sup> A striking common denominator of these surveys is purely procedural. More general comments are invariably supplemented by a rundown of trade by region, starting out with the Baltic and moving on via Norway, northern Russia and eastern Friesland to England, France, the Iberian peninsula, Italy and the Levant within Europe while considering the East and West Indies separately. This familiar scheme facilitates a neat presentation of research results, but it may also add a degree of fragmentation that obscures our view of the system as a whole. This matter has more implications than appears on the surface. Did the Dutch trading system resemble a business enterprise consisting of relatively independent branches, or should we view it as a coherent entity with a common base but shifting priorities over time? The approach chosen here leans towards the latter alternative, stressing aggregates above branches, while giving

separate treatment to what is believed to reveal the mainstream of development, namely the Baltic trade.

Another aspect of the surveys with repercussions beyond presentation alone concerns the time periods chosen for arranging the information. Bruijn adheres to the overall setup of the *Maritieme Geschiedenis der Nederlanden* in treating the seventeenth century as one congruous whole. This contrasts with the earlier Van Dillen survey and the later *AGN* surveys, which both break off in 1650, the latter even to the point of switching authors: from Klompmaker to Klein. But this similarity between the two is rather superficial. Van Dillen's chronology is based on his observation of a general shift in Dutch economic development from growth before 1650 to consolidation and stagnation afterwards. The setup of the *AGN* surveys, however, reflects the great importance attached by the editors of the *AGN* to Braudel's *renversement de la tendance séculaire* about 1650, i.e. from long-run expansion to secular contraction in the European economy at large.<sup>6</sup> In conjunction, these two strategies of presentation reinforce the argument that there was expansion in Dutch trade precisely because of the lack of expansion in the trade of other countries.

Van Dillen depicts the period of 1580-1650 as one of gradual and balanced economic growth based on the ascendancy of Amsterdam as an international staple market. Foreign trade profited from structural advantages, such as the complementarity between supply and demand in the Baltic and southwestern Europe, fostering the well-known exchange of grains from the north for salt and other consumer goods from the south. Lack of protection in England and France offered an opportunity for the Republic to take full advantage of its lead. After 1650 precisely the previous growth factors turned into their opposites, thus causing consolidation at a lower level than during the first half of the century. There was less complementarity between northeast and southwest, whereas British and French protectionism grew. A special position within the trading system is reserved by Van Dillen for the Dutch East India Company (*Verenigde Oostindische Compagnie*, or VOC), which he views as a major innovation in business organization capable of safeguarding the supply of those colonial commodities for which European demand was increasing. Here the expansion during the first half of the seventeenth century continued throughout the second half.<sup>7</sup> Such a conception, with its loosely structured suggestions towards explanation, remains too much on the level of description to satisfy the present-day observer.

Bruijn stresses the comparative advantage of the Dutch commercial fleet on account of its attractive freight rates and use of multi-purpose vessels. Freedom of competition and a minimum of State interference shaped an ideal climate for capitalizing on the competitive advantages enjoyed by Dutch merchants. Rapid expansion went on, according to Bruijn, up to 1680 (or 1670). The subsequent stagnation is ascribed to both the rise of protectionism among the competitors and the deteriorating supply and demand conditions in the vital grain trade from about

1650. This combination of disadvantages applied especially to the trade on the Mediterranean, where British and French merchants started to squeeze out their Dutch rivals in a diminishing market.<sup>8</sup> Bruijn's emphasis on maritime matters easily hinders us from viewing the Dutch trading system as above all an economic organism.

Klompmaker is particularly interested in relations among merchants operating on the international stage. In his opinion, links through migrants abroad and skills in negotiating deals or cooperating with others explain much of the success of Dutch trade during the first half of the seventeenth century. Times were unsafe and hazardous, and only the staple market at Amsterdam could offer both price stability and continuous ample supplies. In virtually all branches of European trade, the Dutch cultivated their early lead and gained where others failed to try. It was a multilateral system of trading relations, which at first even proved quite resistant to emerging protectionism in England and France.<sup>9</sup> Klompmaker's conception suffers from a lack of systematic focus that would have facilitated a thorough insight into the causes and effects of Dutch success in international trade.

Klein is intrigued by the process of transition from rapid growth to stagnation and eventual decline in the economy of the Dutch Republic. After 1650 economic expansion came to a halt, giving way to a striking stability and apparent calmness. In fact, Klein argues that no fundamental change of decisive importance took place in the Dutch trading system between 1650 and the end of the Republic in 1795. Baltic trade remained at the apex, complemented as it was by trade with England, France and Spain; Norway, northern Russia and the Mediterranean constituted extensions of lesser consequence.<sup>10</sup> Klein's conception is heavily influenced by the shadow thrown by the eighteenth-century Republic and the discussion about its decline. This does not make for a close linking-up with Klompmaker's contribution which, incidentally, was published one year later.

Gaastra describes the continuous expansion of VOC trade during the seventeenth century, between Europe and Asia as well as between Asian destinations. His account underscores the deviating path chosen by the VOC as compared to the foreign trade of the Republic in general during the seventeenth century: a more persistent expansionary trend, more reliance on monopolies, more Government interference, a less balanced exchange of commodities.<sup>11</sup> The fate of the Dutch West Indian Company (*Westindische Compagnie*, or WIC), however, was less fortunate with persisting competitive losses in American and African waters. British rivals moved in, and by the third quarter of the seventeenth century the WIC had effectively been reduced from being a business enterprise to merely administering distant branch offices.<sup>12</sup>

Israel has stirred up considerable commotion among Dutch economic historians with his novel vision of the trading system of the Republic during the Golden Age. He emphatically rejects the idea that the rise and fall of the Dutch Republic as a superior trading nation was inexorably linked up with Braudel's *renversement de*

*la tendance séculaire* about 1650. By implication he also rejects the primacy of bulk trade over 'rich' trades, i.e. the decisive role played by Baltic grain as compared to luxury consumer goods from either southern Europe or Asia. Israel presents a sequence of seven phases of changing fortune in the Dutch position in world trade. We are especially concerned here with the second through fifth phases: the boom during the truce with Spain (1609-1621), the classic phase of Dutch predominance (1621-1647), the zenith according to Israel (1647-1672) and, finally, the consolidation beyond the zenith (1672-1700). Each phase is demarcated by political change, especially in the relationship between the Republic and Spain. In stark contrast to most conventional historiography, Israel assigns a key role to the State in the advancement and protection of Dutch commercial interests abroad.<sup>13</sup> Israel's conception may be viewed as a frontal attack on Braudel's tradition and a plea for the restoration of the political argument in explaining economic history.

While acknowledging Israel's great expertise and boldness in constructing a grand design, critics have been less than convinced by the main thrust of his argument. Van Zanden disputes Israel's interpretation of the available statistical material and does not accept a trend in trade determined by political events. Noordegraaf concedes that Israel poses the right questions but regrets that polemic aims ('Braudelophobia') lead him astray from treating these questions in a constructive fashion.<sup>14</sup> Elsewhere, I have myself attempted to isolate the structural components of Israel's argumentation, adding supplementary information on two individual branches of Baltic trade (Sweden and Elbing). My conclusion is that the time is not yet ripe for a re-interpretation of the importance of bulk trade of the kind proposed by Israel.<sup>15</sup> The near future will without doubt produce new insights emanating from a critical examination of Israel's conception; in that sense alone, Israel has made a lasting contribution to Dutch historiography.

Modern historiography on the foreign trade of the Dutch Republic in the seventeenth century has suffered from a lack of empirical research. Studies based on primary or statistical material have been distressingly scarce. Highest priority has been assigned to reiterating the familiar contours of expansion and consolidation in Dutch commerce by branch, trade outside Europe being the only area subjected to a more penetrating scrutiny. Israel's intervention is, however controversial, and therefore highly welcome. The following may serve as a set of suggestions for how to make faster progress in this field using available and well-known sources.

### 3. *A troublesome source and long-run trends*

The *convoien en licenten* have a dubious reputation among students of the Golden Age, being alternately acclaimed as the single most important statistical

source of the era or discarded as virtually useless because of their lack of consistency and reliability. Yet this aggregation of revenues from export and import duties does represent a unique combination of an uninterrupted time series running throughout the century and a singularly wide coverage of activities related to foreign trade. Thus, even if not ideal, this series possesses qualities that become important precisely because of the want of other primary sources on the foreign trade of the Republic. The *convooien en licenten* offer the only Dutch base for a systematic quantitative analysis of the Republic's foreign trade in the seventeenth century. Of course, the weaknesses and limitations of the source should also be taken into account. We will discuss in due order the quality of the source and the main conclusions to be derived from it. The two themes are interrelated.

The *convooien en licenten* were introduced into historiography in 1908 by Becht, who explained how the duties were levied and listed the main figures. The revenues reflect aggregate turnover in exports and imports combined, and can thus be used as a proxy for the general trend in the development of the Republic's foreign trade over time. Becht also indicated some of the problems associated with the use of this source. The tariffs were reduced somewhat in 1609 but restored at the old level in 1625 and revised again in 1651 and 1655. Prior to 1674 the source includes only overseas trade. Payments by the VOC and WIC are not included from 1683, and there is danger of contamination in the figures with other duties such as the so-called *derde verhoging* (the additional, one-third increase levied from 1651).<sup>16</sup>

In 1948 Westermann offered a critical analysis of the *convooien en licenten*, especially with regard to the Admiralty of Amsterdam, the foremost of the five admiralties responsible for collecting these duties. According to Westermann, the revenues have to be corrected for tariff revisions in order to become comparable over time. Revenues before 1626 and after 1650 must be raised by about one-third. In fact, upward corrections are carried out only for 1624-1625 and 1651-1680, since Westermann's alternative tables run from 1624 and since the *derde verhoging* – coincidentally of the same magnitude – is allegedly included in Becht's figures for later years. Van Dillen, however, who edited Westermann's article for posthumous publication, remains critical of the corrections for the years 1651-1680, since the tariff rate revisions of 1651 do not unambiguously indicate a correction of 33% and also because the *derde verhoging*, as Westermann apparently knew, in fact amounted to less than one-third (22%).<sup>17</sup>

Van Dillen remains apprehensive, barely making use of these data in his survey of Dutch commerce during the seventeenth (and eighteenth) century. While admitting that these statistics are of some significance, he emphasizes the omissions as well as the possibility of widespread fraudulent practices. His example was followed by Bruijn and Klompmaker, who both consider the *convooien en licenten* exclusively in connection with the various fiscal burdens imposed by the Dutch authorities on foreign trade in the seventeenth century.<sup>18</sup>

Recent years have witnessed a certain revival of the *convooien en licenten* as a valuable source for the history of foreign trade, not only for the eighteenth century but also for the seventeenth century. Klein cautiously applies this series for sketching the global upward trend prior to 1650, but refrains from using it for the second half of the seventeenth century. He accepts Westermann's corrections for Amsterdam and stresses relative change by relying not only on index numbers instead of absolute figures but also on a graphic representation of five-year moving averages. Van Zanden goes one step further, identifying this source as the most important statistical series for the seventeenth century. He renders a graph of absolute figures for the period 1621-1650, complete with interpolations for missing years but without Westermann's corrections.<sup>19</sup>

The issue of whether or not to correct Becht's original figures has been discussed seriously in recent years only by Nusteling and Israel. These two authors reach widely differing conclusions. Nusteling prefers to return to the situation prior to Westermann and his corrections, whereas Israel goes one step further than Westermann in elaborating the reconstructions of the original time series.<sup>20</sup>

Nusteling concedes that discontinuity does present a serious problem in the *convooien en licenten* but views this as caused by changes not so much in tariff rates as in the troublesome matter of evasion. Nusteling argues that the net result of the various changes in tariff rates around 1651 was virtually neutral: levies for *convooien en licenten* were reduced by 25% whereas the newly introduced *derde verhoging* was effectively of about the same magnitude. According to Nusteling, the real problem lies in the variation of the scope for evasion over time, which in turn was dependent upon both actual practices at collection and the prevailing general price level. Nusteling suggests that collectors at the admiralty of Amsterdam normally permitted an evasion rate of about 30%. This is evident from the fact that revenues from the *convooien en licenten* increased by far more than expected at the time of the temporary abolition of the *derde verhoging* between 1681 and 1685, *i.e.* the collectors sought compensation for forgone revenue in restricting evasion. At the same time there was less propensity on the part of merchants to cooperate when market prices fell, thus causing an increase in effective tariff rates.<sup>21</sup> The changing conditions of collection impair comparability over time but fail to provide a sufficient basis for reconstructions. Such is Nusteling's argument.

Israel, on the contrary, argues that reconstructions are vital to our use of the *convooien en licenten* series. In fact we need to modify Westermann's corrections. In the first place, the higher tariffs were in force during a slightly different period, 1621-1648 instead of 1626-1651, which implies upward revisions for 1649-1650 but not for 1621-1625. Besides, Westermann's correction percentage (33%) is too low and should ideally be raised to 60% on account of the higher tariff level. However, in the actual presentation of his data, Israel restricts himself to the years after 1640 and Westermann's lower correction percentage, which means that

significant differences arise only for the years 1649 and 1650.<sup>22</sup> In a critical commentary, Van Zanden discards Israel's case for more corrections as mere 'juggling', and asserts that the corrections are not necessary when it comes to assessing Israel's argument on the global trend in foreign trade prior to 1650.<sup>23</sup>

The discussion about the quality of the *convooien en licenten* as a consistent time series derives its importance from the difference in trends as inferred from the uncorrected versus corrected versions of the series. Becht depicts a continuous increase in revenue for the Republic as a whole before 1650, followed first by a decline below the level of the 1620s, then by such a substantial recovery that we may speak of a general enlargement of the turnover of Dutch foreign trade up to 1700. The downward and upward shifts during the second half of the seventeenth century are smoothed out by Westermann's corrections, at any rate as far as Amsterdam is concerned, but this does not prevent Van Dillen from stressing the high level still prevailing for the international staple market towards the end of the seventeenth century.<sup>24</sup> It thus appears that Westermann's corrections, whether justified or not, contributed to the appreciation of a fundamental division of the seventeenth century into two phases of development: expansion up to 1650 and consolidation or contraction afterwards.

Continuous expansion culminating in a peak in 1648-1651 forms the major observation inferred by Klein from the (corrected) *convooien en licenten*. This is corroborated by Nusteling, who applies the uncorrected data as well, and also draws on supporting evidence from supplementary sources.<sup>25</sup> Yet this is precisely the point at which Israel disagrees profoundly with his Dutch colleagues. According to Israel, the higher correction factor (60% rather than one-third) produces the decisive shift from his third phase, the one of 'prolonged stagnation' from 1621 to 1647, to his fourth phase, the zenith in Dutch commerce, *i.e.* 1647-1672.<sup>26</sup> It thus appears that the very perception of development in Dutch foreign trade during the seventeenth century hinges upon the extent of correction of the *convooien en licenten*. Did the long-run trend, around 1650, turn from expansion to stagnation, or from stagnation to expansion?

At this point it appears wise to retrace our steps and return to the original series as presented by Becht. The discussion over the years about the *convooien en licenten* has shown how hazardous or even arbitrary corrections and modifications of the original figures can be. This is the undercurrent of Van Dillen's commentary while editing Westermann's text and also the sentiment expressed more recently by both Nusteling and Van Zanden. It is also substantiated by comparison of actual tariff rates at different points in time. Two examples may suffice. The levy on imports of rye was 1.0% in 1609, 0.8% in 1625, 0.5% in 1651 and 0.9% in 1655. The levy on exports of wheat amounted to 3.9% in both 1625 and 1651, but 5.4% in 1655.<sup>27</sup> Even if we concede that grains were exceptionally little affected by tariff revisions, such changes in tariff rate levels do not offer sufficient justification for elaborate modifications of revenue figures. In other words, the grounds for

correction remain slippery. Moreover, the very fact that other products might have been more affected by tariff revisions is not the same as to say that these products formed such a large proportion of the total as to justify corrections with implications for all commodities.<sup>28</sup> As long as we cannot ascertain that tariff rates for major commodities were substantially altered for a protracted period of time, the safest solution is to stick to Becht's original, uncorrected data while keeping in mind that comparability over time might be constrained, in particular because of variations in the rate of evasion.

An entirely different matter with respect to the *convoeien en licenten* concerns the years for which revenues from at least one admiralty are missing; this obviously precludes the calculation of an aggregate for the Republic as a whole. The lack of data from Amsterdam for the years 1600-1613 forces us to choose 1614 as the point of departure for the time series. Out of the subsequent 87 years (1614-1700) there are 43 years with data lacking for one or more admiralties, most frequently Zeeland (e.g. 1676-1700). Following Van Zanden, priority is here given to the construction of a continuous time series above corrections because of changes in tariff rate levels.<sup>29</sup>

A procedure was designed to estimate aggregates for years with blanks for individual admiralties. The share of the admiralty or cluster of admiralties in question was assumed to be the same as the average share during the ten closest years with complete data. This average is used to calculate a multiplier by which the aggregate of the non-missing admiralties must be raised in order to get the reconstructed total for all. As an example let us consider the years 1639 and 1640, which have data from all admiralties except Rotterdam (*Maze*). In this case the base period comprises the years 1631, 1633-1634 and 1641-1647, with a share of Rotterdam in the known total of 22.5%, which in turn warrants the aggregate for 1639 and 1640 to be raised by 1.29.<sup>30</sup> The final time series thus combines aggregates cited by Becht and the reconstructed totals (Appendix I).<sup>31</sup>

The global trend in aggregate revenue from *convoeien en licenten* during the seventeenth century may be split into three segments: a continuous expansion up to the 1640s, continuous decline throughout the 1650s, 1660s and 1670s and, finally, a recovery from 1680 onwards (Appendix I). The average of the 1640s exceeded the level of 1614/20 by almost 60%, whereas the average of the 1690s was more than twice the level of the 1670s. Early peaks were reached in 1642/43 and 1648 at 2.8 million guilders, whereas the true nadir fell at less than one million guilders in 1672/73. Only from 1687 did aggregate revenue on occasion exceed the peaks of the 1640s, e.g. in 1698/99 with the highest point of the century, more than three million guilders. It is unlikely that such dramatic shifts in magnitude can be ascribed to changing tariff rates alone. We may infer that the three-phased trend of expansion, contraction and recovery globally reflects the development of foreign trade in the Dutch Republic.

The expansion leading up to the peak of the 1640s was rather sluggish, with revenues falling back to slightly lower levels on several occasions, notably in the years 1625/28 and towards 1640. Yet the pace of expansion quickened, as illustrated by impressive rates of increase: 16% between 1614 and 1620 (six years), 27% between 1620 and 1630 (ten years), and 28% between 1630 and 1640. The aggregate remained quite stable at an impressive level for several years after 1641, declining significantly only from 1649. This impression of protracted expansion reinforces Van Zanden's conclusion about this period and is difficult to reconcile with the 'profound stagnation' cited by Israel.<sup>32</sup>

The contraction from the 1650s to the 1670s can obviously be linked to warfare and emerging protectionism in Europe. The shadow of three Anglo-Dutch wars is manifest in the abysmally low aggregates for 1652/53, 1665/67 and 1672/73, whereas the unimpressive levels in 1657/59 and 1674/80 probably reflect disturbed conditions of commerce in the Baltic in particular.<sup>33</sup> Even if the effects of protectionism in England and France are not easily quantified or related to the turnover of trade, it is not accidental that the long-run tendency towards contraction coincides with the introduction of the British navigation acts and discriminatory tariff increases in French ports.<sup>34</sup> This does not appear to justify an epithet such as 'zenith' for this phase of development in Dutch foreign trade.<sup>35</sup>

The recovery began immediately in 1681 and gained momentum in the second half of the 1680s.<sup>36</sup> There was marked decline to a more moderate level during the wartime years around 1690 and also in 1696/97, but the rest of the decade displayed all signs of a successful recovery, especially after the peace treaty of Rijswijk in 1697. Too little is known about actual trade movements to venture upon a detailed examination of causes and effects. Suffice it to say that the dynamism of Dutch foreign trade had not yet succumbed by the end of the seventeenth century. It was a time of consolidation rather than stagnation.

The pattern of regional participation among the five admiralties in the foreign trade of the Republic remained strikingly stable throughout the seventeenth century. The share of the admiralty of Amsterdam oscillated around one-half, whereas Rotterdam (*Maze*) and Zeeland with about 20% each took turns in claiming second rank. This remained very much the same during the phases of expansion and contraction. The recovery from 1680, however, was supported by a rising share for Amsterdam matched by a decline for both Rotterdam and West Friesland. The least significant portion in the total, a mere 2 to 3%, was held by the admiralty of Friesland, ranking even lower than West Friesland. Such a stable pattern offers few clues for identifying structural shifts in foreign trade associated with regional specialization.

The cohesion in development over time between the five admiralties appears to have been more pronounced during the period of expansion than during the subsequent contraction or recovery. Prior to 1650 a statistically significant link can be established between revenues in each admiralty to revenues of at least one

other admiralty. Yet the number of such links varies considerably, with West Friesland being connected to all other admiralties and Friesland only to one (West Friesland). Zealand scores almost as high on this account as West Friesland (links with all but Friesland), whereas Amsterdam and Rotterdam both occupy intermediary position, each with two links to other admiralties.<sup>37</sup> This testifies to the solid geographical basis of expansion of foreign trade in the Dutch Republic during the first half of the seventeenth century.

The main use of the *convooien en licenten* lies in the possibilities of identifying main trends in the turnover of Dutch foreign trade. It is, however, also possible to contrast aggregate revenues with occasional spot data on the global order of magnitude of foreign trade in the Republic. For 1636, Bruijn reports an estimated aggregate value of 30 million guilders for imports from European ports, *i.e.* excluding both the Levant and Asia.<sup>38</sup> Assuming for the sake of argument that total exports were of the same order of magnitude, we arrive at an estimate of total turnover of some 60 million guilders. The latter figure may be confronted with our reconstructed total of revenues from *convooien en licenten* for 1636: 2.5 million guilders, which in turn would imply an average tariff of less than 4%. In view of other evidence, such a tariff level is not improbable.<sup>39</sup> Yet it is too shaky a basis for a full-fledged projection of aggregate turnover from the *convooien en licenten*.

When precise statistics are scarce and uncertainties abound, it is wise to turn from absolute magnitudes to relative proportions, not only in terms of changes over time but also with respect to the importance of the various branches of foreign trade in comparison with each other. According to the breakdown in the 1636 estimate cited by Bruijn, 70% of all imports from European sources originated in three leading regions: the Baltic (40%), France (15%) and the British Isles (15%).<sup>40</sup> This substantiates the claim of the Baltic as the alleged 'mother-trade' (*moedernegotie*) and compels us to consider other branches of trade within a comparative perspective. As indicated above, the question of relative importance among the branches of trade has recently caused some controversy, with Israel asserting that the emphasis in Dutch trade shifted from bulk to 'rich' trade, *i.e.* from the Baltic in particular to the Mediterranean and Asia.<sup>41</sup>

Changing political constellations played a key role in determining the development of Dutch trade with the Mediterranean, with the major breakthrough taking place during the truce of 1609-1621 and the momentum of expansion being regained after 1648. The political factor thus formed a necessary, but not sufficient, precondition for rapid expansion next to the essential complementarity in terms of commodities supplied and demanded. Israel shows how the improvement of the political situation after 1609 coincided with a shift in the exchange of goods: from grains for salt, to spices and naval stores for silver and silk. And even though the Spanish embargo starting in 1621 was frequently evaded, Dutch merchants lost their lead over their English rivals in particular, which eventually produced

the Anglo-Dutch division characteristic of the Mediterranean market at mid-century.<sup>42</sup>

Within the Mediterranean branch of trade it is customary to distinguish between the Iberian peninsula, Italy and the Levant. Silver from Spanish America was to an appreciable extent disseminated throughout northern Europe via shipping between Seville or Cadiz on the one hand and Amsterdam on the other. This enhanced the dependency on international politics and enabled Amsterdam to emerge as a world market for bullion.<sup>43</sup> Portuguese salt traditionally smoothed trade with other regions, notably the Baltic. The export surplus with respect to Italy buying large quantities of grains contrasted neatly with the deficit in the Levant supplying high-valued textiles.<sup>44</sup> This all contributed to make the Mediterranean an exceptionally dynamic branch of Dutch trade in the seventeenth century.

Regrettably, however, statistics on the Mediterranean branch of trade are notoriously poor, amounting to little more than series of numbers of ships and fragmented invoice values.<sup>45</sup> For comparative purposes we can merely note that the Mediterranean supplied 10% of European imports entering the Republic in 1636, a figure excluding the Levant and applying to the alleged nadir of Dutch-Mediterranean commerce during the Golden Age.<sup>46</sup>

The spectacular success of VOC trade in the seventeenth century has fascinated contemporary observers and later historians alike, but the tendency in the literature is to treat the VOC in isolation from the trading system of the Republic at large. Much attention has focused on the position of the VOC within Asian trade or the significance of the VOC as a business enterprise. The traditional perception advanced by Van Leur that the VOC was both marginal and backward within the Asian context is largely rejected today. Recent research has highlighted the sizeable involvement of the VOC in intra-Asiatic trade as well as the modern traits of this firm, the world's first truly multinational corporation. A major achievement in this regard was the systematic analysis of VOC accounts presented by De Korte in 1984.<sup>47</sup>

The process of expansion resulted above all from the elaboration of the trading network of the VOC in Asia. This was marked by a succession of new establishments and military conquests, *e.g.* Batavia 1619, Banda 1622, Deshima and Malakka 1641, Amboina and Ceylon 1656, Macassar 1667, Bantam 1684. The volume of shipping increased rapidly, from about 100 vessels per year before 1620 to a stable level of 230 ships on average per year from the 1660s. Spices traditionally formed the most important produce brought by the VOC to Europe, and this changed only slowly in the direction of high-valued textiles and metals. For the late 1660s Gastra estimates that spices, especially pepper, made up almost 60% of total deliveries to the Amsterdam Chamber of the VOC, the largest of the constituent Chambers and alone responsible for about one-half of VOC turnover.<sup>48</sup>

The aggregate value of colonial produce leaving VOC establishments in Asia for the Republic tripled between the 1620s and 1680s, from 1.5 to 4.5 million

guilders on average per year.<sup>49</sup> Yet this probably grossly understates the true value of VOC shipments, as these figures are based on invoice values at the point of departure in Asia. The sales value at the auctions in Amsterdam were substantially higher, especially for spices, for which the VOC monopolized supply. A better representation is given by aggregate turnover figures running from 1641. Average annual turnover climbed from 8 million to almost 13 million guilders between the 1640s and the 1690s. This continuous expansion enabled the VOC to make substantial profits, in particular during the 1660s, when net profits corresponded to about 15% of total turnover. According to estimates by De Korte, cumulative profits during the period 1613-1692 reached 34 million guilders.<sup>50</sup>

The significance of the VOC as compared to other branches of Dutch trade at the time is difficult to assess. The long voyages to distant destinations easily appeal more to the imagination than routine departures to the Baltic, but must not lead us too far astray. We know that the VOC enterprise offered employment to almost 8,000 individuals in the 1620s, a number which was to surpass 20,000 in the first decade of the eighteenth century.<sup>51</sup> De Korte's turnover estimates for the 1640s, adjusted for the probable rate of increase since the 1630s, when confronted with the 1636 total for European imports, suggests a VOC share of 18% in aggregate imports or 9% in presumed combined imports and exports of the Republic.<sup>52</sup> In addition there were obviously considerable spin-off effects of the VOC branch into other trade on account of the re-exports of spices in particular. In a less tangible way the VOC as an institution is also likely to have contributed substantially in terms of innovations in business organization and management.

Yet the Asiatic branch of trade with its continuous expansion did not mirror the long-run general trend in Dutch trade at large. This also holds true for the Mediterranean branch, with its different sequence of phases of development as determined by political conditions. The main trend in Dutch trade at large, as inferred above from the *convooiën en licenten*, was one of expansion, contraction and recovery. To explore this trend more carefully we must turn to the Baltic branch of trade, the alleged *moedernegotie* of the Dutch Republic in the seventeenth century.

#### 4. *The Baltic; or, structure versus competition*

It was the Dutch statesman Johan de Witt who in 1671 officially reaffirmed that trade with the Baltic region formed the foundation and backbone of the Republic's commerce.<sup>53</sup> This axiom was incorporated into Dutch historiography and remained largely undisputed until Israel appeared on the stage claiming that Dutch primacy in world trade grew increasingly dependent on 'rich' non-Baltic trade instead of relying on bulk shipments from the Baltic. According to Israel, this became especially apparent during the fourth phase of primacy (1647-1672), when

contraction in Baltic trade coincided with a zenith for Dutch commerce at large.<sup>54</sup> The key role played by the Baltic branch, in our appreciation of what Dutch foreign trade in the seventeenth century looked like, certainly justifies special treatment of this region. In examining Baltic trade we shall rely primarily on the Sound Toll data, based on registration at the point of collection of duties paid by ships passing through the Danish Sound, the gateway to the Baltic. Although other (non-Dutch) sources on Baltic trade for this period do exist, the Sound Toll data form the only source possessing both a general geographical coverage – as they are not limited to individual countries or ports – and a continuity extending throughout the seventeenth century.<sup>55</sup>

The publication of the Sound Toll tables, appearing between 1906 and 1983, evoked both euphoria and scepticism among historians dealing with trade in northern Europe.<sup>56</sup> Some acclaimed the tables as a source of immense value, with virtually every column constituting a separate chapter of European economic history.<sup>57</sup> Others, however, lamented that the published tables were not only error-prone but also unnecessarily inaccessible because of cutting off the direct link between eastbound and westbound journeys of individual ships as entered in the original registers. Lengthy discussions ensued about the designation of nationality in the source, the so-called *hjemsted*, referring to either ship or skipper, and also on the extent to which registration was evaded.<sup>58</sup> Without entering into these discussions, we merely confirm that our interest lies in the exclusive bilateral exchange between the Republic and the Baltic, as well as in the wider scope of Dutch participation in the trade between the Baltic and third countries. Precisely the latter aspect can be explored by referring to shipping and trade as defined by nationalities of ships or skippers. With respect to the matter of fraudulence, we can do little more than observe that inspection routines in the Sound were tightened in 1618 and that no viable correction procedures have been developed in the literature.

The most accessible part of the Sound Toll tables contains the shipping movements, and this also forms the basis for much global analysis. We may thus observe how the average number of Dutch ships passing through the Danish Sound in either direction each year increased to an early peak of 3,400 in the 1610s, only to decline to 2,300 by the 1640s and less than 1,200 in the 1670s, whereas the Dutch percentage in the Baltic total followed a similar path: a peak at 70% in the 1610s and a decline to some 60% by the 1640s and even less than 50% in the 1670s and 1690s.<sup>59</sup> In a similar vein Israel is induced to speak of a spectacular boom during the 1610s followed by consolidation at a respectable, but reduced level between 1620 and 1650 and decline in the 1650s and 1660s.<sup>60</sup> Yet, as has been amply demonstrated in the literature, the size and capacity of the ships increased substantially in the seventeenth century, which renders an indicator such as sheer numbers of ships unreliable, if not misleading.<sup>61</sup>

A better measure, albeit more difficult to handle, uses the volumes of goods transported as aggregated by 'Dutch' nationality (whatever that may mean) and by Dutch port of origin or destination. With such an approach, however, a number of methodological or technical problems have to be tackled. One problem concerns the selection of the most important commodities which, in the absence of value figures, necessarily contains a subjective element. Another problem refers to the consistency of the statistics over time, as procedures of aggregation were changed for years after 1661: overall totals for all trading partners are no longer given, whereas totals for Dutch destinations of westbound trade can be inferred from supplementary specifications, which was not possible for the preceding period. A third matter concerns whether or not to combine the volume figures from the Sound Toll tables with price data from other sources in order to calculate percentages by product in the total, thus identifying possible changes in the commodity composition of trade.

The literature teaches us that Dutch trade with the Baltic was dominated by a handful of key commodities: salt, herring, wine, textiles and assorted colonial goods in the eastbound direction, and various grains (rye, wheat and other grains), wood and iron on return voyages to the west.<sup>62</sup> Concentration on these ten commodities, five for each direction of trade, appears all the more sensible because it includes goods in both bulk and 'rich' trades. Salt, herring, wine, grains and wood are counted as 'bulk' whereas the 'rich' trades covered textiles, colonial goods and iron.<sup>63</sup> The attempt to achieve consistency throughout the entire century compels us to calculate aggregates of all trade by product whenever missing (*i.e.* from 1661) but makes it less urgent to reconstruct the proportion of westbound trade destined for the Republic, which would in fact be possible only from 1669.<sup>64</sup> By implication, the percentage share of the strictly bilateral exchange between Dutch ports and the Baltic region is only available for the eastbound direction. This limitation is, however, less severe than it may appear, since the Dutch share in westbound exports from the Baltic was about the same as the share of Dutch skippers in total westbound trade, at any rate during the 1670s and 1680s.<sup>65</sup> Finally, no effort is made to link volume data with unit prices, since our selection covers only part of the total and since our concern is with the general development over time rather than with relations across commodities.<sup>66</sup>

Our data (Appendix II)<sup>67</sup> may be considered against the background of the general impression developed in the literature. According to this view, the Dutch enjoyed a virtually uncontested position in eastbound transports of salt, herring and wine (Rhine rather than French), whereas in textiles and colonial goods much effort had to be put into rivalry with the British before sizeable slices of the market could be secured. The westbound grain trade experienced a few early peaks, in the 1610s and 1640s, but declined after 1650, which in turn was not fully compensated by an ever higher Dutch share in the total. At the same time the Dutch also lost ground to the British in westbound transports of wood and iron.<sup>68</sup> In this

conception, eastbound trade was above all affected by restructuring, whereas westbound trade was marked by a tendency towards decline.

In eastbound trade on the Baltic we differentiate between the commodities for which the Republic traditionally possessed a comparative advantage – salt, herring and wine – on the one hand, and on the other hand newly emerging goods for which such an advantage had to be acquired – textiles and colonial goods. For each category of eastbound commodities we shall look at the interplay between absolute and relative change, *i.e.* between volume developments and the Dutch share in the total.

Salt, herring and wine all experienced an expansion towards an early peak, either in the 1620s (wine) or in the 1640s (salt and herring).<sup>69</sup> The subsequent decline of the volume of Dutch transports only came to a halt after several decades, in the 1680s, when it gave way to a recovery of limited magnitude and duration. The lowest level, which was during the 1660s for wine and in the 1670s for the other two, corresponded at best to 40-45% of the one-time peak level (salt and wine) and at worst to barely more than 20% (herring). In all three cases the decline in Dutch transports was more rapid than for aggregate imports entering the Baltic. As a result, the Dutch share in transported volumes was considerably lower after mid-century than before. This applied especially to wine, where the Dutch-controlled portion dropped below one-half as early as the 1670s, a fate which salt and herring only met with in the 1690s.<sup>70</sup>

The fact that absolute decline was accompanied by relative decline in Dutch shipments of salt, herring and wine tells us that the Republic suffered not only from putting high stakes in losing branches but also from intensified competition. There were two types of contractive tendencies at work independently of one another, which in turn explains why the highest Dutch share in the total fails to coincide with the peak level in absolute terms – the highest relative level was reached as early as in the 1610s for salt and wine but only in the 1650s for herring. The next step is to assess the relative importance of the structural and competitive tendencies towards contraction.

The structural tendency towards contraction was especially strong for salt and herring. For both products the peak level of total Baltic imports coincided with the peak for Dutch transports, *i.e.* in the 1640s. In both cases total transports varied from year to year in very much the same fashion as Dutch transports, which is only logical with a relative decline of limited dimensions. Significantly, the two products differ in one crucial respect: the extent to which Dutch transports from the Baltic originated in Dutch ports. Virtually all herring shipped by the Dutch was indeed Dutch herring, whereas only an unimpressive portion of salt shipments, one-quarter at the most, had ever been loaded at quayside in the Republic. As a consequence Dutch salt shipments varied in a very different fashion as compared to Dutch salt exports to the Baltic.<sup>71</sup> This suggests that the structural

tendency towards contraction in the salt and herring trade may be linked to a saturation of demand in the east rather than to shifts in supply in the west.

Structural factors probably played a less prominent role in the wine trade. Although total Baltic imports increased markedly during the 1620s when Dutch transports reached a peak, the true peak level for the aggregate was in the 1690s. Moreover, Dutch transports stuck to roughly the same path as actual Dutch exports, but both deviated markedly from overall imports.<sup>72</sup> The Republic's position in the Baltic wine trade was apparently dependent on the capability to export wines which had been imported into the Republic in the first place. This made the Republic highly vulnerable to discriminatory measures, as became all too apparent at the time of rising protectionism, especially from French quarters.

Textiles and colonial goods present a different trend in the eastbound trade of the Republic with the Baltic.<sup>73</sup> There was a continuous and at times even spectacular expansion, leading up to a peak level of Dutch transports by the 1680s. For textiles this level corresponded to three times the level of the 1610s, whereas Dutch transports of colonial goods almost doubled between the 1630s and the 1680s. The share of Dutch transports increased dramatically during the early phase of introduction of these commodities in the Baltic market. This process appears to have been completed by the 1640s, when Dutch skippers accounted for more than 90% of shipments of colonial goods and almost 60% of shipments of textiles, levels that remained unsurpassed for the rest of the century. Later, the Dutch share in both branches of trade fell, eventually touching one-half by the 1690s even for colonial goods.

For textiles and colonial goods, structural and competitive tendencies pointed in opposite directions, with demand in the Baltic for these commodities rising continuously and competition among European suppliers getting tougher. The relative decline in the face of absolute expansion is only to be explained by setbacks in the rivalry with England and France in particular. This was more pronounced for colonial goods than for textiles, which in turn demonstrates how the success of the VOC in Asiatic trade secured an initial lead that the Republic was unable to maintain in the long run.

Competitive capacity in Dutch transportation of textiles and colonial goods to the Baltic was above all determined by the possibilities of supplying these goods from the staple market at Amsterdam. Dutch transports and actual exports from the Republic were virtually identical for these 'new' products and this formed an important deviation from past experience. British and French rivalry, aided by protectionist measures, precluded Dutch transports of these commodities from ports outside the Republic. Competition also meant that annual variations in Dutch transports or exports coincided with variations in the Baltic aggregate to a less than perfect degree.<sup>74</sup> These brief observations confirm the emphasis, in the literature, on competition with respect to shipments of textiles and colonial goods to the Baltic.

The issue of the declining grain trade on the Baltic, with all its repercussions for the development of the Republic's foreign trade at large, was introduced into Dutch historiography by Faber in the 1960s and has remained at the centre of discussion ever since.<sup>75</sup> Faber relies on Sound Toll data and asserts that both total shipments and Dutch shipments of grains (rye, wheat and other grains) were markedly lower during the second half of the seventeenth century as compared to the first half. According to Faber's estimates, total annual grain shipments from the Baltic averaged 68,500 lasts before 1650 and 55,800 lasts after 1650. Using Unger's excerpts from the Sound Toll tables, he also estimates average Dutch transports of grains to have exceeded 50,000 lasts before 1650 and grain shipments alone to have claimed about one-half of total cargo-carrying capacity both before and after 1650.<sup>76</sup> Direct access to the Sound Toll data on westbound transport enables us both to review this general hypothesis and to more thoroughly scrutinize fluctuations over time in the Dutch grain trade.

Both total and Dutch shipments of grains from the Baltic at first increased dramatically, reaching impressive peaks in 1608, 1618/21, 1641/44 and 1649. The subsequent decline was both long and steep, whereas the recovery only occasionally touched one-time peak levels, *e.g.* in 1681/85 (Appendix II). Aggregate shipments did indeed fall, from an average in excess of 65,000 lasts per year before 1650 to some 55,000 lasts in the second half of the century. Also Faber's average for Dutch shipments prior to 1650, 50,000 lasts, is confirmed by these calculations. Interestingly, however, the annual average of Dutch grain shipments during the second half of the century, which remains unspecified in the literature, now turns out to be as much as 45,000 lasts, *i.e.* barely lower than the 50,000 lasts for the first half.<sup>77</sup> In other words, during the second half of the seventeenth century the Dutch share of the Baltic grain trade declined by considerably less than total Baltic grain trade.

There was obviously a strong relationship between total and Dutch shipments of Baltic grain. Annual variations largely coincided, more so for wheat than for rye, both in the first and in the second half of the century.<sup>78</sup> The Dutch share in the total was high, mostly three-quarters or more for rye and occasionally even exceeding 90% for wheat and lesser grains. The peaks of 1618/21 and 1681/85 saw a very high average Dutch share in rye shipments at 85-87%, whereas the peaks of the 1640s apparently were accompanied by more competition and a smaller Dutch portion in the expansion. The less steep decline after 1650 of Dutch shipments, as opposed to the aggregate, implied a slight increase in the Dutch share, from 78.5% on average during the first half of the century to 82% in the second half.

The juxtaposition of structural and competitive factors of change can also be discerned in Dutch participation in the Baltic grain trade. The overall tendency towards contraction after 1650, which has rightly been associated above all with changing demand and supply conditions on the vital southern European market,<sup>79</sup>

may be labelled both structural and exogenous with respect to the development of Dutch foreign trade. But this tendency was partly offset by a competitive tendency towards expansion, with the Dutch not only retaining their share of the market but also expanding it somewhat. The net result was a smaller decline of Dutch transports as compared to total transports.

But competition and structure interacted in yet another fashion. In the course of the seventeenth century an important shift took place in the commodity composition of westbound Baltic grain exports. The traditional predominance of rye gave way to a more balanced range, with sizeable portions of wheat and lesser grains as well. This can be illustrated by the average share of rye, wheat and lesser grains in Dutch shipments during the first and second half of the century. Rye fell from 76% to 59%, whereas wheat gained from 15% to 23%, with lesser grains accounting for the rest, 9% and 18% respectively. It is tempting to suggest that this change in the composition of Dutch grain transports in the direction of more variety explains part of the success in terms of competition.

Wood and iron both rose from insignificance to prominence in the course of the seventeenth century, thus contributing to the broadening of the range of export products offered by the Baltic region.<sup>80</sup> Within the Baltic this shift in the commodity composition of westbound trade resulted partly from a more pronounced role being played by Sweden and Finland, alongside the traditionally first-ranking exporters in the southeastern part of the region, namely Poland and East Prussia. The Dutch share in the 'new' trade was initially very high, which without doubt is related to the intimate economic ties between the Republic and Sweden during the first half of the century in particular.<sup>81</sup> But after the 1650s increasing Swedish assertiveness, if not protectionism, and more English competition soon caused an erosion of the Dutch share in this part of Baltic trade.

The structural tendency towards expansion for both wood and iron rested upon a successive enlargement of supply to meet the ever larger demand in England in particular. In fact the true dimensions of this expansion are not visible in the Sound Toll tables, since Swedish ships enjoyed exemption from payment of duties in the Sound (except in wartime) from 1645, *i.e.* precisely when a Swedish mercantile fleet was built up. Total shipments of Swedish bar iron as registered in the Danish Sound stayed far below iron exports as registered in Stockholm in, for instance, 1661 and 1674-1680, or aggregate export production of iron in Sweden as known for 1694.<sup>82</sup> Significantly the two spectacular peaks in Dutch shipments of Swedish iron in the seventeenth century occurred in 1657 and 1678, both years in which Sweden was at war with Denmark.

The structural expansionary tendency was counteracted by a competitive tendency towards contraction in transportation of both wood and iron. The Dutch share in total known westbound shipments of iron through the Sound fell from one-half or more in the 1620s and 1630s to a mere one-quarter in the 1680s and 1690s. The relative decline amidst the overall absolute expansion was less pronounced in the

wood trade, with the Dutch share falling from two-thirds in the 1620s to one-half in the 1670s or 1690s. The difference between wood and iron in this respect may also be inferred from variations in absolute levels. Dutch shipments of wood continued to rise, albeit at a slower pace than for the Baltic as a whole, whereas Dutch iron transports in the 1680s and 1690s were a far cry from the levels which had prevailed in the 1640s and early 1650s (leaving aside the wartime decade of the 1670s). The degree of cohesion between annual variations in total and Dutch shipments grew higher in wood than in iron.<sup>83</sup>

The interplay between structural and competitive forces in the Dutch trade on the Baltic in the seventeenth century brought about dynamic change with widening product ranges and differential paces of expansion, a rather different impression from the one advanced by Israel.<sup>84</sup> General prospects deteriorated for traditional products (salt, herring, wine, grains), whereas competition increased in 'new' branches (textiles, colonial goods, iron, wood). Dutch merchants were at times successful in meeting foreign competition, notably in grains, but less so when protectionism turned the scale, as it did for wine, colonial goods and iron in particular.

### 5. Conclusion

The Golden Age of the Dutch Republic in the seventeenth century does not easily lose its fascination among admirers and critics alike. It was the time when the small, young Dutch nation achieved stunning economic success and a pivotal position in world trade. Much is yet to be done in historical research before we can gain a full understanding of Dutch foreign trade at the time, how it grew and how it succumbed. This contribution reviews trends in recent historiography and suggests directions for a quantitative analysis on both a global level and the level of a specific branch of trade, the Baltic.

The paradigm of general expansion up to 1650 followed by consolidation or stagnation is firmly rooted in contemporary handbooks, with continuous expansion in Asiatic trade via the VOC forming the exception confirming the rule. The only serious challenger of conventional wisdom with respect to the unsurpassed peak of the 1640s and the primacy of Baltic or bulk trade is Israel. Yet so far Israel has not succeeded in convincing his Dutch colleagues by his view of a zenith at a later date and a growing predominance of 'rich' trades over bulk.

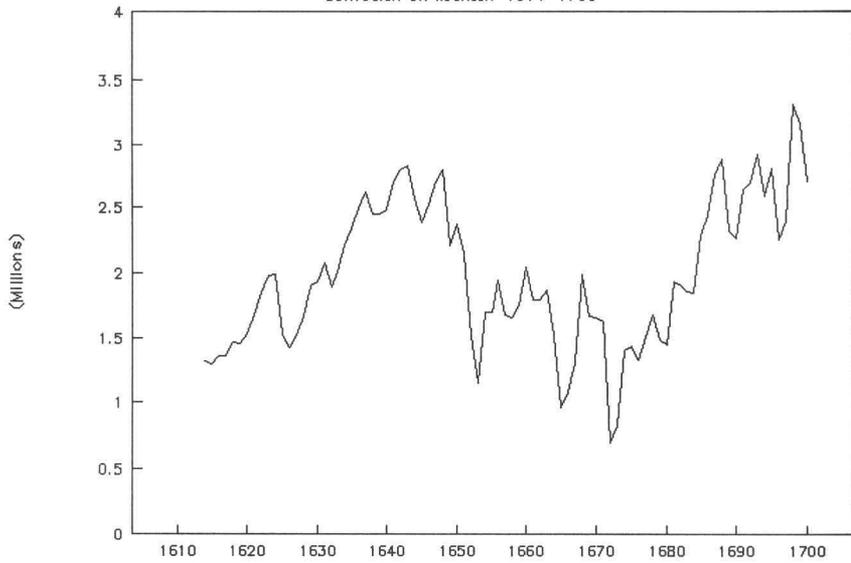
Our preliminary analysis of the sole source reflecting turnover at a very high level of aggregation, the *convooien en licenten*, suggests a three-tiered pattern of change in Dutch foreign trade during the seventeenth century: expansion up to the peak of the 1640s, subsequent contraction, and a recovery only from the 1680s. This interpretation rests upon a decision to reconstruct aggregates only for years with incomplete data and to refrain from applying corrective factors. It is,

however, unlikely that such corrections, inevitably containing an arbitrary element, would alter the main trends profoundly.

Our scrutiny of Dutch trade with the Baltic reveals a more dynamic pattern than has often been appreciated in the literature. Product ranges were widened and competition stiffened. Structural and competitive components can be isolated in long-run change, with the Dutch Republic at times retaining its strong position in declining trades (salt, herring) or having to settle for a smaller share in expanding trades (colonial goods, iron). Dutch shipments of grains from the Baltic after 1650 declined considerably less, in fact hardly at all, as compared to total shipments. The problem of the declining grain trade was a structural matter, not a question of more competition, and appears to have been overstated in the literature, at any rate as far as the Republic goes. The Baltic trade, it must still be said, was the mainstay of Dutch foreign trade during the seventeenth century.

FIGURE 1

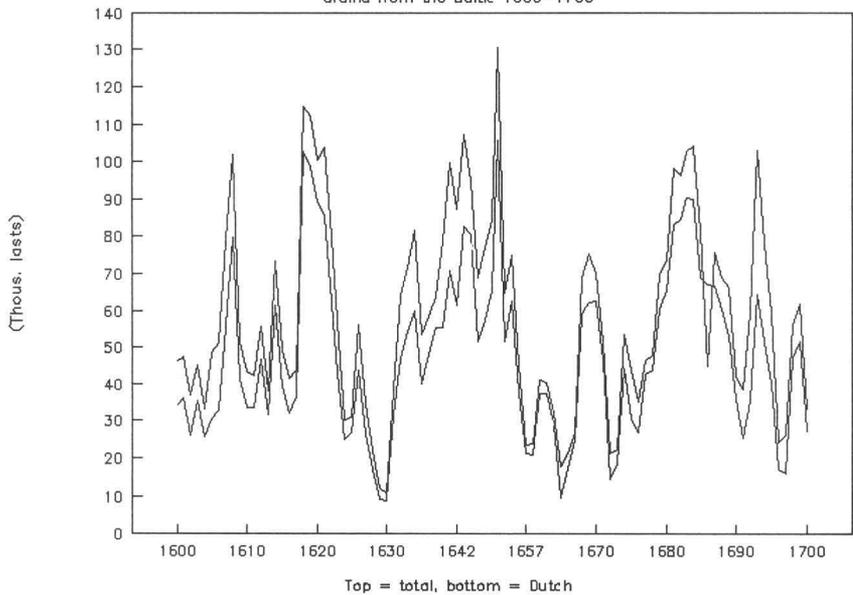
'Convoeien en licenten' 1614-1700



Source: Appendix I.

FIGURE 2

Grains from the Baltic 1600-1700



Top = total, bottom = Dutch

## Appendix I

*Aggregate revenues of 'convoeien en licenten' 1614-1700*

(thousands of guilders)

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1614	1319	1643	2828	1672	686
1615	1295	1644	2562	1673	821
1616	1366	1645	2375	1674	1406
1617	1361	1646	2513	1675	1433
1618	1471	1647	2705	1676	1326
1619	1458	1648	2796	1677	1511
1620	1529	1649	2206	1678	1681
1621	1680	1650	2363	1679	1490
1622	1852	1651	2146	1680	1451
1623	1985	1652	1524	1681	1935
1624	1992	1653	1150	1682	1903
1625	1533	1654	1707	1683	1865
1626	1422	1655	1701	1684	1853
1627	1525	1656	1945	1685	2278
1628	1676	1657	1687	1686	2427
1629	1911	1658	1665	1687	2750
1630	1936	1659	1757	1688	2878
1631	2077	1660	2048	1689	2317
1632	1893	1661	1801	1690	2257
1633	2012	1662	1803	1691	2633
1634	2209	1663	1872	1692	2689
1635	2331	1664	1519	1693	2928
1636	2484	1665	953	1694	2585
1637	2613	1666	1072	1695	2802
1638	2446	1667	1306	1696	2250
1639	2439	1668	1998	1697	2384
1640	2472	1669	1675	1698	3323
1641	2697	1670	1658	1699	3170
1642	2792	1671	1630	1700	2697

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Source: H.E. Becht, *Statistische gegevens betreffende den handelsomzet van de Republiek der Vereenigde Nederlanden gedurende de 17e eeuw (1579-1715)* (Den Haag 1908) Table I [= appendix]. Aggregates were reconstructed for the years 1614/20, 1632, 1635/40 and 1672/1700.

## Appendix II

*Transports of main commodities through the Danish Sound 1600-1700*

(annual averages per decade)

*Eastbound*

	Salt (lasts)		Herring (lasts)		Wine (pipes)	
	Dutch	Total	Dutch	Total	Dutch	Total
1601/10	17356	27022	7877	9211	4587	9093
1611/20	22953	25849	8059	9308	6440	7611
1621/30	23115	28124	6774	8397	8313	10028
1631/40	19631	25002	6737	8752	5413	7436
1641/49	25695	31748	8465	10210	4625	7482
1654/57	20209	26583	4998	5583	4493	6548
1661/70	14902	18978	2554	2879	3177	4872
1671/80	12031	25799	1906	2966	3625	9080
1681/90	17891	25162	2940	3867	5007	10232
1691/1700	9406	21215	1736	3224	2329	12195

	Textiles (pieces)		Colonial goods (thous. pounds)	
	Dutch	Total	Dutch	Total
1601/10	6467	39133	23	48
1611/20	13830	45833	42	70
1621/30	30497	65292	172	283
1631/40	38091	77724	1322	1440
1641/49	36871	65429	1809	2001
1654/57	19348	34958	1184	1495
1661/70	19563	35781	1507	1819
1671/80	21750	40109	1687	2797
1681/90	40887	64018	2362	3996
1691/1700	21882	42166	1913	4280

*Westbound*

	Rye (lasts)		Wheat (lasts)		Other grains (lasts)	
	Dutch	Total	Dutch	Total	Dutch	Total
1601/10	34834	46646	3451	5286	1436	1845
1611/20	47288	55883	6302	7345	3507	3864
1621/30	27422	34775	4180	5214	3150	3703
1631/40	32970	45298	9129	10254	6838	8091
1641/49	46003	64345	16089	18179	9838	11211
1654/57	30796	38641	9485	10257	2896	3147
1661/70	21618	26010	7724	8106	6575	7575
1671/80	23192	28021	9449	10059	6524	8351
1681/90	37281	44561	16406	17420	16304	19295
1691/1700	24019	33230	7660	11464	5860	9280

	Wood (thous. pieces)		Iron (shippounds)	
	Dutch	Total	Dutch	Total
1601/10	19	30	1026	7089
1611/20	36	46	1211	3157
1621/30	45	65	8947	15051
1631/40	28	62	16088	31963
1641/49	39	81	21844	53776
1654/57	20	45	22415	48614
1661/70	264	370	17673	31117
1671/80	291	509	22979	71483
1681/90	667	846	8039	32230
1691/1700	435	879	3352	17086

Source: N.E. Bang & K. Korst, *Tabeller over skibsfart og varetransport gennem Øresund 1497-1660* (Copenhagen 1906-1933) Vol. II:A [1922]; N.E. Bang & K. Korst, *Tabeller over skibsfart og varetransport gennem Øresund 1661-1783 og gennem Store Bælt 1701-1748* (Copenhagen 1930-1953) Vol. II:1 [1949].

## NOTES

- 1 Cf. J. de Vries, 'The decline and rise of the Dutch economy, 1675-1900', G. Saxonhouse & G. Wright (eds), *Technique, spirit and form in the making of modern economies; Essays in honor of William N. Parker* (Greenwich 1984) 149-189; R.T. Griffiths, *Achterlijk, achter of anders?: Aspecten van de economische ontwikkeling van Nederland in de 19e eeuw* (Amsterdam 1980); H. Baudet, 'Nederland en de rang van Denemarken', *Bijdragen en Mededelingen betreffende de Geschiedenis der Nederlanden* 90 (1975) 430-443.
- 2 Cf. J.Th. Lindblad & J.L. van Zanden, 'De buitenlandse handel van Nederland, 1872-1913', *Economisch- en Sociaal-Historisch Jaarboek* 52 (1989) 231-269; H. Brugmans (ed.), 'Statistiek van den in- en uitvoer van Amsterdam, 1 oktober 1667 - 30 September 1668', *Bijdragen en Mededelingen van het Historisch Genootschap* 19 (1898) 125-183; N.W. Posthumus, 'Statistiek van den in- en uitvoer van Rotterdam en Dordrecht in het jaar 1680', *Bijdragen en Mededelingen van het Historisch Genootschap* 34 (1913) 529-537.
- 3 J.I. Israel, *Dutch primacy in world trade, 1585-1740* (Oxford 1989). A Dutch translation appeared as: *Nederland als centrum van de wereldhandel, 1585-1740* (Franeker 1991). For a recent interesting contribution in a slightly different vein, see: H.P.H. Nusteling, 'Strijd om de commerciële suprematie in de zeventiende en achttiende eeuw', *NEHA-Bulletin* 6 (1992) 5-23.
- 4 J.L. van Zanden, 'The Dutch economic history of the period 1500-1940; A review of the present state of affairs', *Economic and Social History in the Netherlands* 1 (1989) 9-29, in particular 15.
- 5 J.G. van Dillen, *Van rijkdom en regenten; Handboek tot de economische en sociale geschiedenis van Nederland tijdens de Republiek* ('s-Gravenhage 1970) 37-174, 332-386; J.R. Bruijn, 'De vaart in Europa' and F.S. Gaastra & P.C. Emmer, 'De vaart buiten Europa', L.M. Akveld, S. Hart & W.J. van Hoboken (eds) *Maritieme geschiedenis der Nederlanden* (Bussum 1977) II: 200-241, 242-288; H. Klompmaker, 'Handel, geld- en bankwezen in de Noordelijke Nederlanden 1580-1650', *Algemene geschiedenis der Nederlanden* (Haarlem 1980) VII: 98-127; P.W. Klein, 'Handel, geld- en bankwezen in de Noordelijke Nederlanden 1650-1795', *Algemene geschiedenis der Nederlanden* (Haarlem 1979) VIII: 160-184. See further: J.R. Bruijn, 'Scheepvaart in de Noordelijke Nederlanden 1580-1650', *Algemene geschiedenis der Nederlanden* (Haarlem 1980) VII: 137-155; J.R. Bruijn, 'Scheepvaart in de Noordelijke Nederlanden 1650-1800', *Algemene geschiedenis der Nederlanden* (Haarlem 1979) VIII: 209-238; F.S. Gaastra, *De geschiedenis van de VOC* (Haarlem 1982) 98-135. For a brief overview see: P.W. Klein, 'De zeventiende eeuw (1585-1700)', J.H. van Stuijvenberg (ed.), *De economische geschiedenis van Nederland* (Groningen 1977) 79-118, in particular 101-106.
- 6 A.M. van der Woude, 'De "Nieuwe Geschiedenis" in een nieuwe gedaante', *Algemene Geschiedenis der Nederlanden* (Haarlem 1980) V: 9-35, in particular 23-24.
- 7 Van Dillen, *Van rijkdom en regenten*, 36-37, 54-56, 90, 98, 113, 128, 331, 340-341, 350-352, 363, 377, 499-500.

- 8 Bruijn, 'De vaart in Europa', 201-205, 209-211, 217-218, 238. Cf. Bruijn, 'Scheepvaart 1580-1650', 137-138, 141-143; Bruijn, 'Scheepvaart 1650-1800', 218, 227-228.
- 9 Klompmaker, 'Handel, geld- en bankwezen', 99-101, 103, 106, 118-119.
- 10 Klein, 'Handel, geld- en bankwezen 1580-1650', 160, 162-163, 174-175. Cf. Klein, 'De zeventiende eeuw', 118.
- 11 Gaastra, *De geschiedenis van de VOC*, 98-135. Cf. F.S. Gaastra, 'De VOC in Azië tot 1680', *Algemene Geschiedenis der Nederlanden* (Haarlem 1980) VII: 174-219.
- 12 E. van den Boogaart, 'De Nederlandse expansie in het Atlantisch gebied 1590-1674', *Algemene Geschiedenis der Nederlanden* (Haarlem 1980) VII: 220-254.
- 13 Israel, *Dutch primacy*, 8-11, 405-415. Cf. J.I. Israel, 'The "New History" versus "traditional history" in interpreting Dutch world trade primacy', *Bijdragen en Mededelingen betreffende de Geschiedenis der Nederlanden* 106 (1991) 469-479.
- 14 J.L. van Zanden, 'De "nieuwe visie" van Israel', *Bijdragen en Mededelingen betreffende de Geschiedenis der Nederlanden* 106 (1991) 451-457; L. Noordegraaf, 'Vooruit en achteruit in de handelsgeschiedenis van de Republiek', *Bijdragen en Mededelingen betreffende de Geschiedenis der Nederlanden* 106 (1991) 458-468.
- 15 J.Th. Lindblad, 'Structuur en conjunctuur in de handel van de Republiek in de zeventiende eeuw; Zweden en Elbing als voorbeelden', *Leidschrift* 9 (1992) 59-72.
- 16 H.E. Becht, *Statistische gegevens betreffende den handelsoverzet van de Republiek der Vereenigde Nederlanden gedurende de 17e eeuw (1579-1715)* (Den Haag 1908) 85-93, 192, III-V, VIII.
- 17 J.C. Westermann, 'Statistische gegevens over de handel van Amsterdam in de zeventiende eeuw', *Tijdschrift voor Geschiedenis* 61 (1948) 3-15, in particular 6-9. Comments by J.G. van Dillen are inserted on p. 10-11. An additional complication is that the *derde verhoging* was abolished in 1681 but reinstated in 1685. Westermann's argument that the increase because of the *derde verhoging* makes an upward correction superfluous thus only applies from 1685, not from 1681. It appears that no correction is applied to the years 1681-1685 since the total burden of levies was then reduced, but that is strictly speaking beside the point as the whole exercise concerns the level of *convooiën en licenten* apart from other levies.
- 18 Van Dillen, *Van rijkdom en regenten*, 279-281, 506-508; Bruijn, 'De vaart in Europa', 207; Klompmaker, 'Handel, geld- en bankwezen', 104. On smuggling and fraud, cf. Joh. de Vries, 'De ontduiking der convooiën en licenten in de Republiek tijdens de achttiende eeuw', *Tijdschrift voor Geschiedenis* 71 (1958) 349-361.
- 19 Klein, 'Handel, geld- en bankwezen 1580-1650', 161; Van Zanden, 'De "nieuwe visie"', 453, 457. Van Zanden's graph is based on: M.C. 't Hart, *In quest for funds: Warfare and state formation in the Netherlands 1600-1650* (Leiden 1989) 209-213. For the eighteenth century, cf. Joh. de Vries, *De economische achteruitgang der Republiek in de achttiende eeuw* (Amsterdam/Leiden 1959) 20-24, 185-193.
- 20 H.P.H. Nusteling, *Welvaart en werkgelegenheid in Amsterdam 1540-1860; Een relaas over demografie, economie en sociale politiek van een wereldstad* (Amsterdam/Diemen 1985) 86-92; Israel, *Dutch primacy*, 280-283.
- 21 Nusteling, *Welvaart en werkgelegenheid*, 88-89.
- 22 Israel, *Dutch primacy*, 280-281; Israel, 'The "New History"', 470. Israel incorrectly refers to Westermann's correction percentage as 30%. Israel's figures for Amsterdam deviate slightly from those given by Westermann for the years 1640-1648, which

- may possibly be explained by a confusion between the admiralty of Amsterdam and the office of the same name within that admiralty.
- 23 Van Zanden, 'De "nieuwe visie"', 453-454. Van Zanden cites an increase for the admiralty of Rotterdam of 64.5% between 1621 and 1647 which, however, is misread (as 1621/46) by Israel in the latter's reply to Van Zanden's criticism. Cf. Israel, 'The "New History"', 470 n. 4.
  - 24 Becht, *Statistische gegevens*, 204-205; Westermann, 'Statistische gegevens', 13; Van Dillen, *Van rijkdom en regenten*, 507.
  - 25 Klein, 'Handel, geld- en bankwezen 1580-1650' 161; Nusteling, *Welvaart en werkgelegenheid*, 89-92.
  - 26 Israel, *Dutch primacy*, 282.
  - 27 Calculated on the basis of tariff and price data in respectively: Becht, *Statistische gegevens*, 97-104; N.W. Posthumus, *Nederlandsche prijsgeschiedenis I: Goederenprijzen op de beurs van Amsterdam 1585-1914* (Leiden 1943) 4-8, 19-23. Israel's citations of tariffs for these commodities do not always coincide exactly with those presented by Becht, as the two authors rely on different versions of the tariff lists in the *Groot Placaet-Boeck*. Cf. Israel, *Dutch primacy*, 282.
  - 28 Cf. Israel, *Dutch primacy*, 281.
  - 29 Van Zanden, 'De "nieuwe visie"', 454 n. 4. No details are given for the procedure of interpolation.
  - 30 The share of the missing admiralty equals the difference between the reconstructed total (after application of the multiplier) and the known total based on non-missing admiralties, e.g. (1.29-1) is 22.5% of 1.29. Twelve different multipliers, one for each constellation of missing admiralties, are applied. The multipliers vary from 1.07 in 1674-1675, when only the admiralty of West Friesland (including the Noorderkwartier) is missing, to 1.71 in 1679-1680 when all but Amsterdam and Friesland are missing.
  - 31 Becht, *Statistische gegevens*, table I [= appendix]. The totals for 1642 and 1667 have been corrected, as Becht renders them 400,000 too low and 100,000 too high respectively.
  - 32 Van Zanden, 'De "nieuwe visie"', 454; Israel, *Dutch primacy*, 279.
  - 33 Cp. F. Snapper, *Oorlogsinvloeden op de overzeese handel van Holland, 1551-1719* (Amsterdam 1959).
  - 34 See also: Bruijn, 'De vaart in Europa', 212, 227-230; Klein, 'Handel, geld- en bankwezen 1580-1650' 171-172.
  - 35 Cf. Israel, *Dutch primacy*, 279.
  - 36 A word of caution is required with respect to the increase for the Admiralty of Amsterdam by about one-third between 1684 and 1685 alone as the statistics does not permit exclusion of the *derde verhoging* and the Orisontse tol in the latter year. Cf. Becht, *Statistische gegevens*, VIII. The increase in the Amsterdam aggregate did, however, continue also after 1685, e.g. by 27% between 1685 and 1687. The higher level was apparently not the result of registration alone.
  - 37 Statistically significant coefficients of correlation ( $R \geq 0.7$ ) between revenues from *convoaien en licenten* calculated for the period 1600/50: West Friesland with: Friesland: 0.87, Amsterdam: 0.77, Rotterdam: 0.73, Zeeland: 0.69; Zeeland with: Amsterdam: 0.82, Rotterdam: 0.72. Coefficients are only calculated for years for which revenue by admiralty was known.

- 38 Bruijn, 'De vaart in Europa', 213. Cf. Klompmaker, 'Handel, geld- en bankwezen', 112.
- 39 Cp. Van Dillen, *Van rijkdom en regenten*, 334; De Vries, *De economische achteruitgang*, 22.
- 40 Bruijn, 'De vaart in Europa', 213.
- 41 Israel, *Dutch primacy*, 213, 281-282.
- 42 J.E. Israel, 'The phases of the Dutch straatvaart (1590-1713); A chapter in the economic history of the Mediterranean', *Tijdschrift voor Geschiedenis* 99 (1986) 1-30, in particular 5-10, 21-22; Israel, *Dutch primacy*, 97-101, 124-140, 224-236. See further: J.E. Israel, *The Dutch Republic and the Hispanic world, 1606-1661* (Oxford 1982).
- 43 For some interesting estimates of the volume of Dutch re-exports of Spanish bullion to Asia and the Baltic, see: A. Attman, *American bullion in the European world trade 1600-1800* (Gothenburg 1986) 79-91.
- 44 Klein, 'Handel, geld- en bankwezen 1580-1650', 173-174.
- 45 Israel, *Dutch primacy*, 93, 99, 129, 205, 232, 316, 318.
- 46 Bruijn, 'De vaart in Europa', 213.
- 47 Cf. J.Th. Lindblad, 'The economic history of colonial Indonesia; An historiographical survey', *Economic and Social History in the Netherlands* 1 (1989) 31-47, in particular 32-34; J.P. de Korte, *De jaarlijkse financiële verantwoording in de Verenigde Oostindische Compagnie* (Leiden 1984).
- 48 Gaastra, *De geschiedenis van de VOC*, 35-60, 105, 122-123.
- 49 Gaastra, 'De VOC in Azië tot 1680', 213; Gaastra, *De geschiedenis van de VOC*, 125. It is assumed that figures given in these tables are totals per decade.
- 50 De Korte, *De jaarlijkse financiële verantwoording*, 31, 44, 50. Cf. Gaastra, 'De VOC in Azië tot 1680', 219.
- 51 Gaastra, 'De VOC in Azië tot 1680', 200-201; F.S. Gaastra, 'De VOC in Azië 1680-1795', *Algemene geschiedenis der Nederlanden* (Haarlem 1980) IX: 427-464, in particular 443. See also: Gaastra, *De geschiedenis van de VOC*, 75, 77.
- 52 De Korte, *De jaarlijkse financiële verantwoording*, 54; Bruijn, 'De vaart in Europa', 213. De Korte's decadal average for the 1640s is lowered by 15% so as to assure comparability with the data for the 1630s. The subsequent value of VOC trade is added to the total for European ports only in order to arrive at a proper aggregate for all foreign imports (except from the Levant). Total exports of the Republic are assumed to be of the same order of magnitude as total imports. It must be stressed that the entire procedure is highly tentative.
- 53 Van Dillen, *Van rijkdom en regenten*, 39.
- 54 Israel, *Dutch primacy*, 10-11, 213.
- 55 On supplementary Baltic sources, cf. Klompmaker, 'Handel, geld- en bankwezen', 108; Lindblad, 'Structuur en conjunctuur'.
- 56 N.E. Bang & K. Korst, *Tabeller over skibsfart og varetransport gennem Øresund 1497-1660* (Copenhagen 1906-1933); N.E. Bang & K. Korst, *Tabeller over skibsfart og varetransport gennem Øresund 1661-1783 og gennem Store Bælt 1701-1748* (Copenhagen 1930-1953); H.C. Johansen, *Shipping and trade between the Baltic area and Western Europe 1784-1795* (Odense 1983).

- 57 W.S. Unger, 'De publikatie der Sonttabellen voltooid', *Tijdschrift voor Geschiedenis* 71 (1958) 147-205, in particular 187. Unger quotes one of the editors of the Sound Toll tables, Nina Ellinger Bang, who in 1924 became the very first female Cabinet member in the world. Cf. P. Jeannin, 'Les comptes du Sund comme source pour la construction d'indices généraux de l'activité économique en Europe (XVIe-XVIIIe siècle)', *Revue historique* 231 (1964) 55-102, 307-340.
- 58 Cf. A.E. Christensen, *Dutch trade to the Baltic around 1600* (Copenhagen 1941) 356-358. Cf. Van Dillen, *Van rijkdom en regenten*, 41-44, 53; Unger, 'De publikatie der Sonttabellen', 147-148. The possibility of consulting the original registers on microfilm, instead of relying exclusively on the published tables, has recently been created at the Netherlands Economic History Archive (NEHA) at Amsterdam. Cf. P.C. van Royen, 'De Sonttolregisters op microfilm', *NEHA-Bulletin* 4 (1990) 126-127.
- 59 Bruijn, 'De vaart in Europa', 217. Also: Bruijn, 'Scheepvaart 1580-1650', 146; Bruijn, 'Scheepvaart 1650-1800', 221; Unger, 'De publikatie der Sonttabellen', 150.
- 60 Israel, *Dutch primacy*, 93-95, 142, 214.
- 61 Christensen, *Dutch trade*, 345-346; Snapper, *Oorlogsinvloeden*, 305-306; Van Dillen, *Van rijkdom en regenten*, 43; Bruijn, 'De vaart in Europa', 217; Israel, *Dutch primacy*, 215; Van Zanden, 'De "nieuwe visie"', 454.
- 62 Cf. W.S. Unger, 'De Sonttabellen', *Tijdschrift voor Geschiedenis* 41 (1926) 137-155, in particular 150-155; Unger, 'De publikatie der Sonttabellen', 188-205; Bruijn, 'De vaart in Europa', 219.
- 63 Cf. Israel, *Dutch primacy*, 86-95, 406-410; Israel, 'The "New History"', 477.
- 64 Cf. Unger, 'De publikatie der Sonttabellen', 152.
- 65 Two examples may suffice. The average share of Dutch destinations and Dutch skippers in total exports of rye from the Baltic was as follows: 1671/80: 82.7% and 79.1%, 1681/90: 83.6 and 84.2%, 1691/1700: 72.2% and 84.2%. The average share of Dutch destinations and Dutch skippers in total wood exports was: 1671/80: 53.2% and 51.9, 1681/90: 78.5% and 76.9%, 1691/1700: 67.5% and 70.8. Based on data in: Unger, 'De publikatie', 197-203.
- 66 For a different approach with respect to the eighteenth century, cf. P. de Buck & J.Th. Lindblad, 'De scheepvaart en handel uit de Oostzee op Amsterdam en de Republiek, 1722-1780', *Tijdschrift voor Geschiedenis* 96 (1983) 536-562.
- 67 The Sound Toll tables contain no data on trade with the Republic for the years 1632, 1634, 1646, 1650-1653 and 1658-1660.
- 68 Unger, 'De Sonttabellen', 142-145, 148; Unger, 'De publikatie der Sonttabellen', 154-166, 168-176; Bruijn, 'De vaart in Europa', 217-220; Klomp maker, 'Handel, geld- en bankwezen', 106-108; Klein, 'Handel, geld- en bankwezen', 168-169. See also: Van Dillen, *Van rijkdom en regenten*, 47-58, 334.
- 69 Wine is here represented by an aggregation of Rhine and French wines based on the following conversions: 1 pipe = 0.5 barrel = 2 hogsheads = 3.24 aums. Cf. Unger, 'De publikatie der Sonttabellen', 158 n. 38.
- 70 Average share of Dutch transports in total eastbound volume calculated over 1600/57 and 1661/1700 respectively: salt: 78% and 59%, herring: 83% and 71%, wine: 70% and 39%.
- 71 Coefficients of correlation between Dutch transports on the one hand and total transports and Dutch exports on the other calculated for the years 1600/1700: salt:

- 0.85 and 0.51, herring: 0.99 and 0.99. The statistical link between Dutch transports and exports of salt is even weaker when calculated only for the period 1661/1700: 0.24.
- 72 Coefficients of correlation between Dutch transports of wine on the one hand and total transports and exports from the Republic on the other calculated for the years 1600/1700: 0.45 and 0.87. The coefficient between Dutch exports and total transports of wine is 0.52.
  - 73 Textiles form aggregations of *vaevede* stoffer, expressed in pieces and including not only wool but also linen, cotton and silk. Under the broad label 'colonial goods' we find a staggering variety of the most heterogeneous commodities aggregated by weight (pounds).
  - 74 Coefficients of correlation between Dutch transports and total Baltic imports of textiles and colonial goods calculated for the period 1600/1700: 0.86 and 0.90. The coefficient with exports from the Republic is 0.99 in both cases.
  - 75 J.A. Faber, 'Het probleem van de dalende graanaanvoer uit de Oostzeelanden in de tweede helft van de zeventiende eeuw', *AAG Bijdragen* 9 (1963) 3-28; also: J.A. Faber, 'The decline of the Baltic grain trade in the second half of the seventeenth century', W.G. Heeres *et al.* (eds), *From Dunkirk to Danzig; Shipping and trade in the North Sea and the Baltic 1350-1850* (Hilversum 1988) 31-51.
  - 76 Faber, 'The decline', 35, 40. See also: Van Dillen, *Van rijkdom en regenten*, 337.
  - 77 Cp. Unger, 'De publikatie der Sonttabellen', 167-168; Faber, 'The decline', 36-37 Bruijn, 'De vaart in Europa', 218.
  - 78 Coefficients of correlation between Dutch transports and total transports calculated for the period 1600/1700: rye: 0.83, wheat: 0.97, other grains: 0.98. Calculations for the periods 1600/57 and 1661/1700 separately produce only minute deviations from these coefficients.
  - 79 Faber, 'Het probleem', 44-49.
  - 80 Figures for wood are not entirely comparable between the periods before 1657 and after 1661 because of an incomplete presentation of the data in the published tables prior to 1657.
  - 81 See further: J.Th. Lindblad, 'Evidence of Dutch-Swedish trade in the 17th century', J.Ph.S. Lemmink & J.S.A.M. van Koningsbrugge (eds), *Baltic affairs; Relations between the Netherlands and northeastern Europe 1500-1800* (Nijmegen 1990) 205-228.
  - 82 Cf. B. Boëthius & E.F. Heckscher, *Svensk handelsstatistik 1637-1737* (Stockholm 1938) 662, 704-707, 740-742.
  - 83 Coefficients of correlation between total and Dutch shipments from the Baltic are as follows: iron (over 1600/1700): 0.77, wood: 1600/1657: 0.75, 1661/1700: 0.94. It is recalled that data on wood are not comparable for the years before 1657 and after 1661.
  - 84 Israel, *Dutch primacy*, 140-142, 213-217, 302-303.



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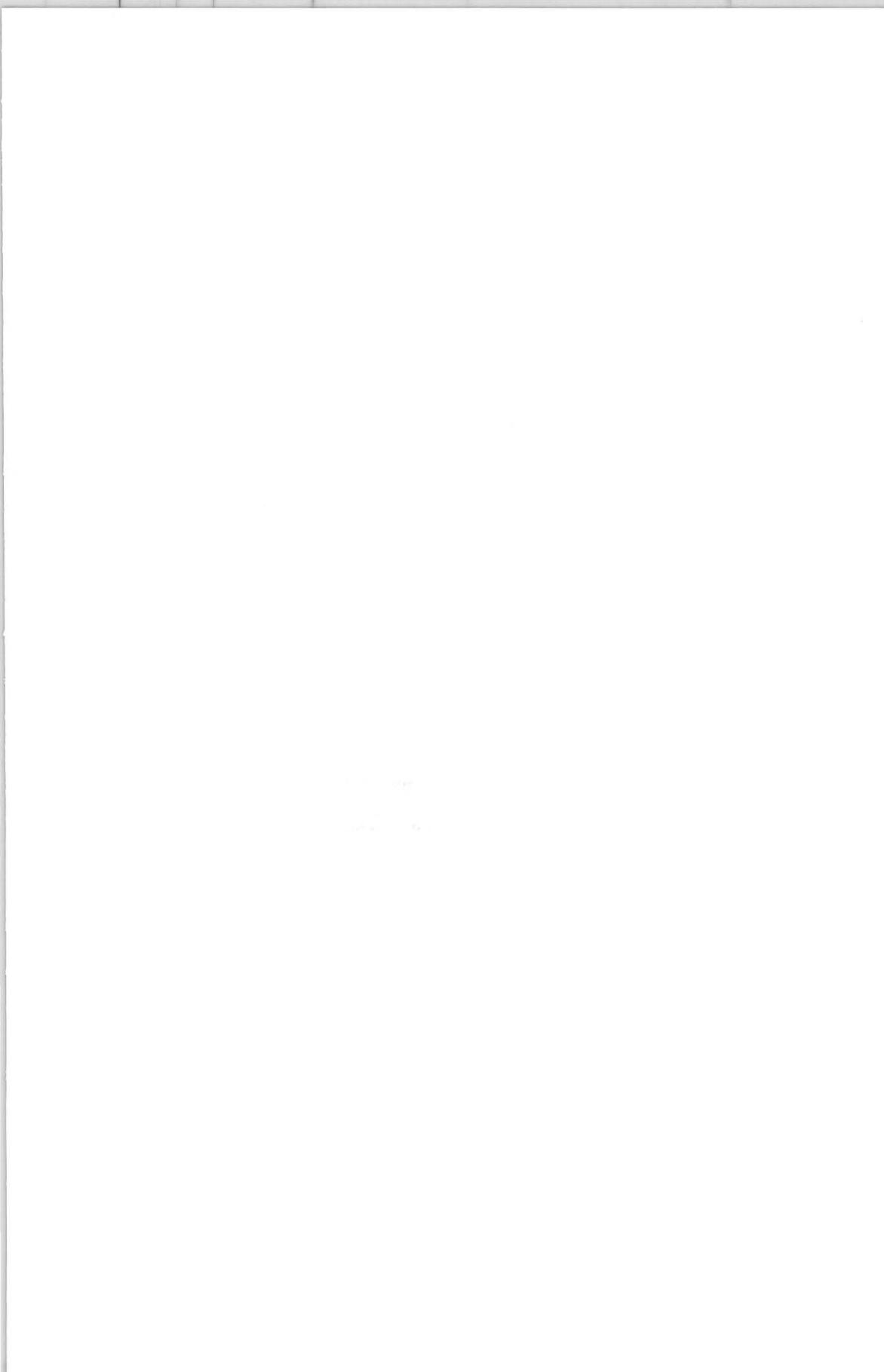
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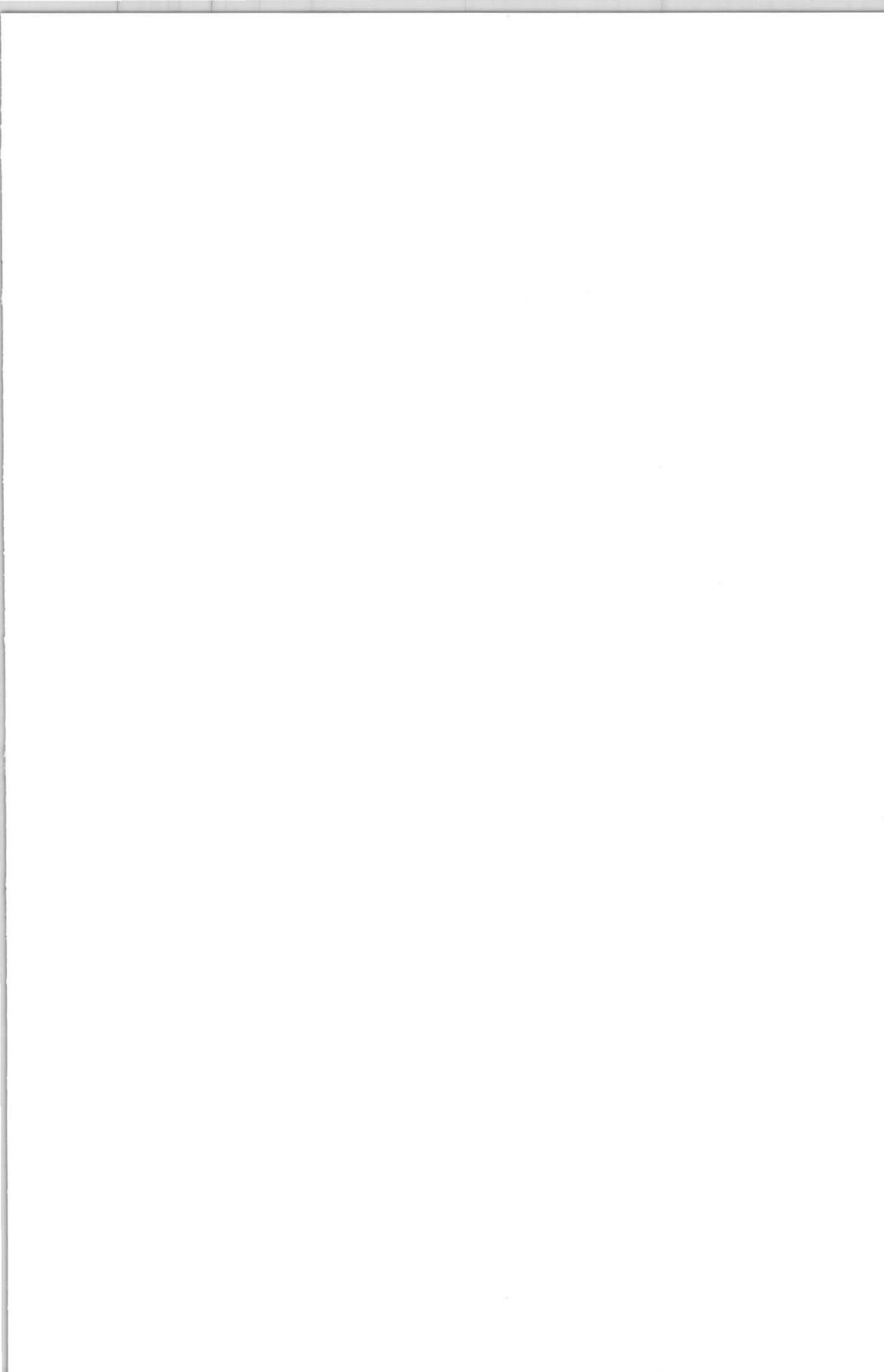
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