CHAPTER THREE

TECHNOLOGICAL CHANGE AND DUTCH ECONOMIC EXPANSION BETWEEN C. 1350 AND 1800

Introduction

The synchronism between the technological advance and the economic expansion of the Netherlands has not gone unnoticed. Several historians, including Charles Wilson, Jan de Vries and Jonathan Israel,\(^1\) have in fact suggested that the economic prosperity of the Netherlands in the seventeenth century in general or its strength in industrial production in particular must have had something to do with its outstanding achievements in technological development. However, the extent and nature of this relationship has never been analyzed in a comprehensive, systematic way. Technological innovation often does not figure in studies on the economy of the Dutch Republic at all. The reason for this omission partly resides in the more general problem of pinning down the role of technological change in economic growth. Economic growth, after all, can not only result from technological change and innovation (what Joel Mokyr has called ‘Schumpeterian growth’) but also from increases in the capital stock (‘Solovian growth’), increase in trade (‘Smithian growth’) and scale or size effects.\(^2\) It is not easy to determine to what extent a given amount of growth may be ascribed to advances in technology. Statements about the contribution of technological innovations even in a situation where an abundance of information exists often 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 missing. In the case of the Netherlands before 1800, the dearth of surveys and serial data on many aspects of economic life at a state-wide level is particularly glaring.

This does not imply that an analysis of the relationship between technological change and economic expansion in the Dutch Republic

is entirely out of the question. Keeping the above limitations in mind, the task at hand might be tackled from two angles: Either one takes a given technical innovation as a starting point and then attempts to assess its overall impact on the economy, or one starts from a sector of the economy that is known to have contributed substantially to the general expansion, and then seeks to identify specific changes in technology that preceded or accompanied growth in that particular sector and to determine their contribution to this growth with due consideration for the possible role of other than ‘Schumpeterian’ sources.

The first approach—taking a given technical innovation as a starting point—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 economic history in Britain and the United States, was the notion of ‘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. However, this method—especially in the way in which it was applied in the energy case—suffers from such severe problems that it can better be left unused, except if the results are interpreted in an extremely cautious way.3

Needless to say, the second method for examining the role of technological innovation in economic growth 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. A reconstruction of the ‘national accounts’ of the Netherlands in the period before 1800 is not available.4 The figures that have been produced so far are at best educated guesses. It will, moreover, be hard, if not often virtually impossible, to isolate changes in technology from changes in the organization

4 In contrast with the period after 1800, see Smits, Horlings and Van Zanden, Dutch GNP, and Van Zanden and Van Riel, Strictures of inheritance.