

Preface

Since the 1930s research has concentrated on the impacts of technological change on industries. They have been studied in several disciplines such as industrial economics, organizational research, and population ecology. Today technological change is more rapid and thus research concerning its effects on industry structures is extremely important. This study is also a part of this tradition and is based on the literature stream of the cyclical model of technological change or the dominant design model. This stream is widely cited by scholars from several disciplines. The main objective of this study is to evaluate whether the number of digits of the Standard Industrial Classification (SIC) code or equivalent in the definition of industry has any meaning. In the base study of cyclical model of technological change, the industry was defined with four-digit SIC code. I argue that the definition of industry with four-digit SIC code disaggregates in the case of the flat glass industry, one of the studied industries, two important subindustries and one crucial flat glass processing industry, the safety glass industry, from the analysis. Moreover, the international aspect so important to both the subindustries, the plate glass and window glass industries, of the flat glass industry are treated too narrowly or even neglected, as well. This study uses five-digit SIC codes which allows deep enough analysis of the relevant sub and value-added industries and the industry-specific international aspects. This book reveals the difference within these two approaches.

This study explores the impacts of technological change on the structures of the flat glass industry in the U.S. and European markets. Empirically, this research focuses on the emergence and diffusion of float glass technology in two independent subindustries, sheet glass and plate glass of the flat glass industry in the two above-mentioned markets. A radical technological change, float glass, introduced in the plate glass industry in 1959 was quickly adopted by the plate glass industry, where it eliminated the labor- and cost-intensive grinding and polishing production phases. Sheet glass was a cheaper product and its manufacturing process did not require as huge capital investments as were needed in the plate glass industry. However, float glass gradually entered the sheet glass markets as well and finally the float glass process replaced the existing drawing methods. The research period in this longitudinal case study is 60 years (1920–1980).

The empirical findings of this study and those of the base study of the cyclical model of technological change are not the same. Some of the differences seem to

be based on the definition of the industry that is the number of digits in SIC codes. The four-digit SIC code reveals only the flat glass industry while the five-digit SIC codes reveals also the two subindustries, the plate glass and sheet glass industries plus the flat glass processing industry, the safety glass industry so pertinent for plate glass. In the base study the four-digit SIC codes may have been the reason for the problematic and inconsistent interpretation of the nature of the gradual convergence of two subindustries. After redefinition of three major concepts of the dominant design model, the modified model is re-examined and re-tested in the flat glass industry in the period of 1950–1980.

Good understanding of the industry is utmost important in historical industry studies. The present report contributes to industry studies by using extensive qualitative analysis as the methodological approach. Also the definition of industry by five- and even six-digit SIC codes made the analysis more thorough. The re-examination suggests two consequences of dominant design, a gradual convergence of the two subindustries and market concentration after a competence-destroying technological change. This study has increased our understanding of the impacts of a technological change on the industry structure.

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