
INDUSTRY AND INNOVATION

1 Introduction

‘Industries’ are undoubtedly a key concept in the economic analysis of industrial organization. They are also a key concept in some of the more important applications of economic knowledge, such as industrial policies and antitrust law. This makes it all the more desirable that identification of industries in reality would be a relatively uncontroversial process. Both to be able to test economic theories and to execute rules or policies, using that concept.

This, however, is not the case. Both for the testing of theories and for practical applications industries are normally identified using the classification of the national bureaus of the census (SIC classifications). That these classifications are far from perfect can be read in any textbook; they make use of too little or too much aggregation, they are not renovated as often as they should be, they suffer from various causes of disinformation etc. What might be more significant is that they are, as will be shown shortly, not based on a correct understanding of the concept itself.

‘Innovation’ is one of the most actively researched subjects in economic analysis. It also is an ever more often vocalized goal of government policy and is coming to the fore as an emphatic (and maybe final) goal of antitrust policy.1 This article serves to present the argument (and give evidence for it) that the concept of ‘innovation’ cannot be extraneous to the concept of ‘industry,’ as it is to the SIC-classified industry, and that therefore theoretical statements about the economic analysis of innovation cannot be tested, nor policies to promote innovation be executed, using SIC data.

The first category reflects simply the conventional use of the word ‘industry,’ that which

2 Methods

Methods to classify or identify industries can be grouped in three categories, according to their reliance on respectively:
a) common-sense descriptions of products and processes
b) the possibilities of demand- (or use-) substitution
c) the possibilities of behavioural interaction between producers.

1 See Brenner [1988].
‘industry’ means in the language. Nightingale would like to follow Brunner and define an industry as those firms which ‘... must be able to operate the same processes and produce a technically similar product within the planning horizon in question.’2 Seven lines further down he varies this to: ‘... an industry is any grouping of firms which operate similar processes and could produce technically identical products within a given planning horizon.’3 Similar products or similar processes, the unsolved problem (which Nightingale acknowledges clearly) still lies in the arbitrariness of detecting essential characteristics and, on the basis thereof, attributing similarities for the purpose of a general classification.

The methods of the second category are based on the reactions of consumers. Triffin was the first to propose to delineate industries by measuring cross-elasticities of demand.4 Abbott5 proposes to group products (and the industries in which they are produced) according to the needs they potentially satisfy (his ideas have gained some popularity in the German literature and are most often referred to with the German word ‘Bedarfsmarktkonzept’).

These proposals are not equivalent since need-categories and expenditure-categories do not have to be alike (if one does not assume a perfectly informed and rational and quite unrealistic consumer). It is very well possible that a consumer regards two products as satisfying approximately the same need but does not consider them in any way together while deciding on his expenditure pattern (and the cross-elasticity between them should therefore be rather low).

Both theoretical approaches suffer from grave problems of measurement. To obtain exact cross-elasticities one should have to be able to look at demand functions under ceteris paribus conditions. Apart from the utopian qualities of ceteris paribus conditions is it evidently impossible to speak about demand functions for a product before one has identified this product. To determine properly in how far certain products satisfy needs one would have to conduct an enormous consumer survey. Again one would have to make some previous classification, and one has to forget that needs (and ways to satisfy them) change over time.6

The methods of the third category concern themselves with the possible reactions of (groups of) competitors to each other’s behaviour. Both Schneider7 and De Jong speak about ‘parametric dependency’ as the criterium to determine if enterprises belong to the same industry. They are in the same industry if their final performance is not only (significantly) dependent of their own choice of parameters but also of the choice of the other. Parameters are all possible variable instruments of competition, like price, quality, advertising, etc. Cross-elasticity of supply does belong to this category although it only works with one parameter (price) and suffers from much of the same problems of measurement as cross-elasticity of demand. Some more statistically sophisticated techniques, like those of Horowitz [1981, 1982], Stigler and Sherwin [1985], and Slade [1986], can also be brought under this category although they were at least partly proposed to repair defects of the demand-substitution methods (and sometimes originally for the delineation of geographical markets). Horowitz examines whether price dif-

2 Nightingale [1976], p. 35.
3 Ibid.
4 See Triffin [1940].
5 See Fishwick [1986], pp. 34–35.
6 See for instance in Baudet and van der Meulen [1982].