International Specialization and Structural Change in the Swedish Manufacturing Industry, 1969–1992

By

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I. Introduction

Increasing trade allows a country to specialize in production. Increased specialization initiates structural adjustment among as well as within industries. This paper evaluates the links between specialization and structure. Definitions of gross, inter- and intra-industry specialization are given in Section II, while Sections III and IV survey trends in specialization in total Swedish trade as well as in bilateral flows. Section V studies if these trends can be explained by shifts in the structure of expenditure. The determinants of intra-industry specialization are discussed in Section VI, while Section VII deals with the effects of specialization on industrial structure. An econometric model is set up in Section VIII, taking account of the simultaneous relation between structure and specialization. The results are given in Sections IX and X, while Section XI concludes.

II. Definitions

Let $X_{it}$, $M_{it}$ and $Q_{it}$ be exports, imports and production in industry $i$ in year $t$. Define gross trade, net or inter-industry trade and intra-in-

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dustry or two-way trade as:
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G_{it} = X_{it} + M_{it}, \quad N_{it} = |X_{it} - M_{it}|, \\
Z_{it} = G_{it} - N_{it} = 2 \min (X_{it}, M_{it}).
\] (1)

The total amount of foreign trade, as a proportion of total domestic production or consumption, indicates the extent to which a country is specialized in production, in the sense that the product pattern of consumption may deviate from that of production. Specialization may occur between as well as within industries and even within firms. Let us define the specialization indicators by relating trade – gross, net and intra-industry – to consumption of a product group, i.e., domestic production plus imports minus exports: 1

\[
g_{it} = \frac{X_{it} + M_{it}}{C_{it}}, \quad n_{it} = \frac{|X_{it} - M_{it}|}{C_{it}}, \\
z_{it} = g_{it} - n_{it} = \frac{2 \min (X_{it}, M_{it})}{C_{it}},
\] (2)

where \(C_{it} = Q_{it} + M_{it} - X_{it}\).

The corresponding aggregate concepts of gross, inter-industry and intra-industry specialization may be written:

\[
g_{t} = \frac{\sum (X_{it} + M_{it})}{\sum C_{it}}, \quad n_{t} = \frac{\sum |X_{it} - M_{it}|}{\sum C_{it}}, \\
z_{t} = \frac{\sum 2 \min (X_{it}, M_{it})}{\sum C_{it}}.
\] (3)

III. Trends in Inter- and Intra-industry Specialization

Figure 1 shows that the degree of international specialization of the Swedish economy, measured as \(g_{t}\), the ratio of gross trade to consumption of manufactured goods, has been steadily growing up to the mid-1980s, when it seems to have leveled out. The picture is the same if trade is instead related to production. In a longer perspective this is a continuation of a trend towards increasing specialization of the Swedish industry. Though the data series used here only go back to 1969, other data indicate that the index for gross specialization \(g_{t}\)

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1 An equivalent alternative could be using domestic production \(Q_{it}\) or the average \((Q_{it} + C_{it})/2\) as the denominator in equation (2).