is substantially offset by higher capital and distribution costs.

In response to all these changes the industry has undergone a substantial restructuring process. Some money-losing plants have been closed and the major companies have increasingly concentrated operations into the production of a smaller range of commodity chemicals and related products. Dupont now concentrates on polyethylene and nylon carpet yarn; C.I.L. has increasingly concentrated on urea and the distribution of chemical products; Union Carbide has disposed of some polyethylene operations and expanded its Linde industrial gas business. Investments by Nova's basic petrochemicals division have allowed the company to replace a significant proportion of its crude oil feedstock with cheaper natural gas liquids.[5] This restructuring, combined with sustained economic growth in North America over the past seven years, has brought financial benefit to the industry over the past two years.[6]

The bulk of the industry's trade is with the United States which in 1988 took almost $1 billion of organic chemicals out of total exports of $1.8 billion, and over $800 million of resins and elastomers out of total exports of $1.5 billion (see Figure 8). The EC is a relatively minor export destination for both sets of products ($246 million of organic chemicals and $43 million of resins and elastomers) -- much less important than the Pacific Rim. Note that the heavy dependence on exports to the United States and to other U.S.-dominated export markets makes the industry vulnerable to increases in the value of the Canadian dollar relative to the U.S. dollar.

1.2 Advanced Industrial Materials

Reliable aggregate figures on shipments, exports and imports are not available for the advanced industrial materials sector. An initial problem is the considerable variability in the types of products that are included in this sector, most of which would not be considered chemical products. The Canadian Advanced Industrial Materials Forum, for instance, includes "matrix oriented lumber," unitized wall panels, and some improved asphalts for pavement construction. More conventional definitions limit the term to advanced plastics, metals, and ceramics and, in particular, to composites and laminates that combine two or more of these materials. For present purposes the latter definition will be used.

The one area on which partially relevant aggregate data are available is plastics products. The relevant figures appear in Table 2. This is an industry that, according to official statistics, has more than 1 000 plants and more than 50 000 workers. It runs a substantial trade deficit ($891 million worldwide in 1988). Its trade is overwhelmingly concentrated with the United States and only 3 per cent of the three-quarters of a billion dollars of exports it generates go to Europe.[7] Its main products are packaging materials of various kinds, construction materials (vinyl siding, plastic pipe), and automobile parts.

In general, this is not an industry with great international strength. Many of the plants are of an uneconomically small scale and depend heavily on technology licensed from foreign companies. Many have depended for their existence on the tariff barriers that are being dismantled as a result of the FTA. Other plants are unlikely to become major exporters because their products are bulky and therefore expensive to transport. This is an industry likely to be hard hit by the FTA; it will probably undergo a substantial adjustment process over the next decade.

There are, however, areas of strength. Royal Plastics, for example, has been a very successful producer of extruded