underestimate of the true percentage, since we were unable to collect information on all of the technologies.

This finding compares favorably with the success rates of technological innovations as a whole. The widely cited Booz-Allen & Hamilton studies (Booz-Allen & Hamilton, 1982), for instance, reported that despite considerable investments in up-front stages of exploration, screening, and business analysis, it still takes seven new product efforts to get one product to market - that is, only 14% of new products are successfully introduced. This suggests that ERIP inventions may be at least as successful as technological innovations generally, though meaningful comparisons are difficult to make because of differences in products, technologies, and measures of success. The literature has reported success rates ranging from 1% to 85% (Cooper, 1983; Crawford, 1987).

Another way to quantify commercial success is by comparing the number of ERIP technologies that have experienced sales to the cost of the Program. Between 1978 and 1992, ERIP expended $74.3 million (in current dollars). At least 129 of the technologies it has supported have entered the market. Similar statistics are available for (1) the Gas Research Institute (GRI), which has operated an R&D program since 1978, and (2) the European Community (EC), which has operated a promotion and exploitation program since 1968 (*Chemistry and Engineering News*, July 8, 1991). By early 1991, 111 new or improved products, processes and techniques had been sold or were in commercial service, due to GRI's R&D budget of $1.41 billion (Dombrowski, et al., 1991). By 1990, approximately 50 inventions supported by the EC had been put on the market as the result of several billion dollars of R&D funding. ERIP's accomplishments compare favorably with both of these other programs.

3.2.1 Market Entries and Exits

The market entries and exits of ERIP inventions over the past decade are portrayed in Fig. 3.1. A market entry in a particular year is an invention that had sales that year, but not the previous year. A market exit occurs when an invention did not have sales in the year in question, but did have sales in the previous year. Inventions "in the market" had sales during the year in question; they may or may not have had sales in the previous year.

The number of ERIP technologies in the market more than doubled from 1980 to 1984, with market entries in most years outnumbering market exits by a wide margin. Between 1985 and 1992, the numbers of ERIP technologies in the market have fluctuated between 48 and 56. Compared to other years during this nine-year period, 1985, 1987, and 1989 had large numbers of market exits. These are also the three years where exits outnumbered entries. Five of the 12 exits in 1985 were due to license agreements that had been successful for two or more years prior to 1985, but which failed to generate continuous sales. Of the 17 market exits in 1987, four are due to missing sales data for