

5. EMPLOYMENT, TAX REVENUES, AND EXPORTS

Technological innovation is a major determinant of economic growth—creating jobs, tax revenues, and exports. Small businesses have been particularly successful in producing innovations for the marketplace (The Futures Group, 1984) and are seen as key players in employment and economic growth (Birley, 1987; Presidents Commission, 1984). Firms with less than 500 employees dominate job creation: the vast majority of new companies are small, and most of the jobs derived from business expansions occur within small businesses. Between 1976 and 1984, small firms accounted for 60.5% of the 17.0 million net new jobs in the United States (Kirchhoff and Phillips, 1988).

This chapter looks at the employment, tax revenues, and exports associated with ERIP technologies.

5.1 JOBS ASSOCIATED WITH ERIP TECHNOLOGIES

The employment impacts of a government investment are difficult to estimate. They include three types of effects:

- **Direct Effect:** These are the on-site jobs created by an expenditure. In the case of ERIP, the direct effect results from the jobs generated by the development, production, and marketing of ERIP technologies and their spinoffs.
- **Indirect Effect:** These are the jobs supported in a wide range of industries that provide the equipment, materials, and services needed to develop, produce, and market ERIP technologies and their spinoffs. The production of many ERIP inventions relies on subcontractors and suppliers, and the distribution and sales of final products rely on retailers, wholesalers, and others.
- **Induced Effect:** As the people who are directly and indirectly employed as a result of a government expenditure spend their weekly paychecks, they are said to "induce" other activity. Induced effects also result from lower utility bills and other costs that occur when an ERIP technology is adopted. These effects increase jobs in the industrial, retail, and service sectors that produce and distribute consumer goods and services.

The data collected by this evaluation are able to address only the direct effects of the Program. The diversity of consumer and industrial markets served by ERIP inventions argues against the use of a single multiplier to estimate the indirect and induced effects. Thus, we are excluding potentially significant employment impacts in our discussion of the jobs associated with ERIP technologies.

The 1993 survey solicited data on the number of full-time equivalent (FTE) employees working on the ERIP technologies in 1991 and 1992. Similar employment data for 1984 through 1990 were collected during previous ERIP evaluations and are presented for comparison purposes (Table 5.1). These data indicate that there are a significant number of jobs associated with the