

accounted for 1.1% of total company funded R&D in the U.S. in that year.⁸⁴ In general, the U.S. affiliates of foreign companies are, on average, virtually indistinguishable from the domestic operations of U.S.-owned companies in terms of value added per worker, compensation per worker and R&D per worker.⁸⁵ Moreover, survey evidence suggests that the main Japanese motivations are to develop products for the U.S. market and to tap into the U.S. basic science base.⁸⁶ Also, current bilateral science policies attempt to increase U.S. researchers' access to Japanese corporate laboratories.

Conversely, U.S. firms operating in Japan employ 5,200 scientists and engineers and spend more than US\$500 million annually on R&D operations in Japan. These firms do not appear to have encountered significant barriers to making R&D investments in Japan, and a large majority express the belief that the investments are worthwhile and intend to expand them in the next five years. Survey responses indicate that the main motivations of U.S. firms doing R&D in Japan are to develop new products for Asian markets and to play a more aggressive role in assimilating Japanese manufacturing and product technology, transferring this expertise back the U.S.⁸⁷ In light of these motivations, it is unlikely that R&D activities in Japan substitute for investment that would otherwise have taken place in the U.S..

In sum, high technology activities in Japan and the U.S. tend to be characterized by a complementary pattern of specialization. Therefore, a case for cooperation between the two trading partners rather than bashing the Japanese seems more rational and appropriate.

4.3 The Reemergence of Competitiveness: "Re-Engineering" Flexible Corporations

We now take it for granted that manufactured goods are made from interchangeable parts. But 150 years ago, people reacted with astonishment and disbelief to the suggestion that goods could be made this way. At that time, the craft system required the custom design and engineering work for each good. The skilled fitters gave products their final shape in a time consuming process. Mass production changed the craft mode of production

⁸⁴ Edward M. Graham, "Japanese Control of R&D Activities in the United States: Is This Cause for Concern?", in Thomas S. Arrison et al., eds., *Japan's Growing Technological Capability*, Washington, D.C.: National Academy Press, 1992; 189-206.

⁸⁵ Edward M. Graham and Paul R. Krugman, *Foreign Direct Investment in the United States*, 2nd ed., Washington: Institute for International Economics, 1991.

⁸⁶ Lois S. Peters, "Technology Strategies of Japanese Subsidiaries and Joint Ventures in the United States", in Mordechai E. Kreinin, ed., *International Commercial Policy*, Washington, D.C.: Taylor & Francis, 1993.

⁸⁷ Justin Bloom, "Survey of Direct U.S. Private Capital Investment in Research and Development Facilities in Japan", Washington, D.C.: National Science Foundation, January 1991.