Chapter 10

The Role of Semiconductor Distributors in the Japanese Semiconductor Market

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ABSTRACT

In 2009, the global semiconductor market was worth $219.6 billion. Japan has the third largest semiconductor market at $38.3 billion, behind America and China. Japan has a unique semiconductor distribution system based on close relations between semiconductor distributors and major IDMs (integrated device manufacturers), electronics manufacturers, and automobile manufacturers. Because of this, it is difficult for overseas semiconductor manufacturers and fabless semiconductor companies to enter the market. Semiconductor distributors play a significant role in Japan’s semiconductor distribution system. The semiconductor market here has four main characteristics. These characteristics are the reason why Japan’s semiconductor distribution system has developed the way it has.

I. INTRODUCTION

Japan’s semiconductor market is worth $38.3 billion dollars. It is the world’s third largest semiconductor market. This market has four main characteristics that, upon analysis, explain why Japan has developed such a unique semiconductor distribution system.

The semiconductor distribution system in Japan is based on very close relationships between major Integrated Device Manufacturers (IDMs), electronics manufacturers, automobile manufacturers, and the semiconductor distributors themselves.
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II. MATERIALS AND METHOD

In earlier research on the semiconductor industry in Japan, Ogawa (2007), Miwa (2001), and Yunogami (2004) investigated the importance of System LSI as the main semiconductor components that determine functionality in electronic devices. Fujimoto (2007), Sakakibara (2005), and Yoshimoto and Shintaku (2005) also hinted at the importance of System LSI as an element of integral architecture, at which Japanese Industry excels. These studies show the importance of relationships between major IDMs and electronics manufacturers, but System LSI comprises only about 30% of the Japanese semiconductor manufacturers’ production, so it does not explain the general-use semiconductor market, which is also strong.

Due to the increase in Japanese exports in the electronics industry since 1980, there has also been much interest and research on the relationship between Japan’s semiconductor market and electronics manufacturing industry from outside of Japan. Drysdale, Peter (1995), Johnson et al. (1989), Lawrence et al. (1990)(1993), Srinivasan (1991), and Okimoto et al. (1984), investigated the fact that Japan has its own semiconductor industry as a source of its competitiveness in electronics manufacturing. Satake (1994)(1996) investigated the relationship between the closed nature of the semiconductor industry and government support for R&D, based on the macro market-lockout theory. As well, Baldwin, Richard (1994) and Borrus et al. (1988a)(1988b) examined the fact that many Japanese electronics manufacturers also have their own semiconductor divisions, and are able to procure all major semiconductor components in-house, as a reason for the closed nature of the semiconductor industry. However, none of these studies addresses the issue for general-purpose semiconductors, which is also a strength for Japanese semiconductor manufacturers. In this research, we clarify some of the reasons that this market is essentially closed by studying characteristics of the market, rather than performing an analysis of the market.

III. FOUR MAIN CHARACTERISTICS

Figure 1 shows growth trends in Japan’s semiconductor industry and, as in the rest of the world,