Based on the survey of company practices in packaging industry in Taiwan within 2008–2010, this study combines Data Envelopment Analysis (DEA) and Malmquist Productivity Analysis to measure the efficiency value of total efficiency (TE), pure technical efficiency (PTE), and scale efficiency (SE) of 11 companies in packaging industry in Taiwan. It aims to provide improvement reference of management efficiency for manufacturers. From empirical results, the average efficiency value in the 3 years was 0.87, where ASE Kaohsiung presented the best performance (1.00), followed by SPIL (0.95) and ASE Chungli (0.90), and Vate was the worst (0.79) in 2008; ASE Kaohsiung the best (1.00), China-Tech and GREATEK the worst (0.83) in 2009; and, ASE Kaohsiung the best (0.99), followed by ChipMOS (0.94), and Vate was the worst (0.78) in 2010. Apparently, ASE Kaohsiung showed the best performance in 3 years, while Vate appeared to be the worst. With Malmquist Productivity Analysis, ASE Kaohsiung is approaching permanently optimal scale, the operation style of SPIL has become permanently optimal scale, and the rest packaging companies are required to improve the business practices toward permanently optimal scale.

Keywords: packaging industry, Data Envelopment Analysis, managerial performance.

Introduction. Domestic IC industry presents complete upstream and downstream systems among which the cooperative network and the advantages of speed, flexibility, and cost of domestic businesses have well-prepared IC industry for international competitiveness. With the great boom of semiconductors in 1997, the industrial depression around 1999, and the low threshold of getting in packaging industry, a lot of manufacturers invested in IC packaging industry, because the domestic packaging industry demonstrated the competitive behavior of mass-production and low offer. Meanwhile, domestic packaging industry has developed the competitive model of "the larger, the stronger" and "strategic alliances among upstream and downstream industries". In this case, the past competitive factors of reasonable price and high quality have now become the basic requirements for competition.

In such a trend with integrated products, it is worth thinking and exploring whether the previous market advantages or the strategic orientation for the upstream IC designers or the downstream packaging tests still present the advantages and effects on the entire integrated circuit industry structure and environment. Moreover, the impact and the effects on the testing industry of integrated circuit industry as well as the appropriateness of the applied strategies are also the considerable issues in the development of SOC products.

In terms of the empirical research of performance, Regression Analysis is commonly utilized. This study tends to apply Data Envelopment Analysis (DEA) to discuss on the managerial performance of domestic companies in packaging industry to show two characteristics. One is to measure multiple inputs and outputs, and the other is to apply the efficiency measures to profit and non-profit organizations. Besides, the application of Data Envelopment Analysis allows measuring the overall efficiency and distinguishing the components of allocative efficiency, technical efficiency, pure technical efficiency, and scale efficiency. As a result, it could measure the