

摘要

本文以台灣工具機產業為例，來分析國家產業政策與公共研發機構的轉變，以及對工具機產業發展的影響。1990 年代以後，世界上先進工具機國家均逐漸朝向高階工具機技術發展，台灣工具機產業亦面臨南韓和大陸等工業化國家的追趕，而不得不進行技術學習和升級。此外，台灣工具機產業有 90% 是屬於中小企業，但是高階工具機技術複雜、研發困難，費用龐大，企業多無法負擔。因此，本文欲探討國家角色，亦即產業政策與公共研發機構對台灣工具機產業發展的影響。

本文的研究成果可以歸納如下：第一，國家逐漸扮演起產業輔導者的角色，產業政策與工具的轉變則是於 1980 年代起廣泛運用各種政策工具達 11 種類型，1990 年代以財政補助為主要誘因鼓勵業界投入技術研發，2001 年以後則是將組織聯盟作為主要的政策工具，為台灣工具機產業的發展開啟了另一種新的技術學習型態。其次，機械所的研發策略轉變為高階工具機技術與工具機關鍵組件技術的雙軸技術研發模式。中區技術服務中心普遍獲得中部工具機業者的信任與肯定，也使得機械所能夠順利協調廠商形成整合性研發聯盟。第三，整合性研發聯盟促使廠商水平合作共同降低研發成本與風險，並藉由產業上下游整機的垂直整合，提升專業模組廠的技術能力，降低模組成本，和提升整機廠的競爭力。

關鍵詞：國家、產業政策、政策工具、公共研發機構、研發聯盟、技術學習

Abstract

This thesis is about the upgrading of Taiwan's machine tool industry and the role of the state on this industry's transformation. Taiwan's machine tool industry faced an urgent challenge after the 1990s, as the counterparts in advanced countries have made rapid progress on technological level, while other industrializing countries, such as South Korea and China, had also been catching up quickly. Due to the fact that most of the firms in Taiwan's machine tool industry were small and medium-sized enterprises that were not affordable financially to do cutting-edge technology research, the burden therefore fall upon the state.

This essay has three major findings. To begin with, the state has gradually become an instructor in helping the development of the industry. The state's role has changed from being an aloof promoter by using various policy instruments to help developing the industry as a whole, to utilizing fiscal incentives to encourage enterprises to engage into R&D activities, and to encouraging the formation of industrial consortia after 2001.

Secondly, the role of the major public research institute, the Mechanical Industrial Research Laboratories (MIRL) of the Industrial Technology Research Institute has changed from a remote research oriented institute to one that engage heavily with local firms, from paying attention only to develop new machine models to ally with local firms to develop core components in the machine tool.

Thirdly, the formation of R&D alliances, led by MIRL, has largely upgraded the capability of the domestic enterprises. This not only shows in the upgrading of local firms' technological competence, but also in the improvement of organizational capability of specialized module suppliers and, the reduction of cost structure of the

products.

**Key words: the state, industrial policies, policy instruments, R&D alliances,
technological learning**