The Impact on Industrial Development in Taiwan from the Opening up of Direct Trade, Shipment and Communications Links with Mainland China

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One of the major consequences of more than a decade of trading between the economies of Taiwan and mainland China, is the significant manpower, commodity and financial flows which have now become established in the mainland. It has, however, been necessary for many firms to carry out their trading activities on a rather indirect basis. Nevertheless, with both Taiwan and China having gained WTO accession at the end of 2001, the further opening up of the markets of mainland China has created greater demand from Taiwanese businesses for the wholesale opening up of direct trade, communications and shipment links across the strait so that enterprises can take advantage of the growing business opportunities. However, the Taiwanese government continues to display a rather cautious stance on national security, and on industry as a whole, with the key issue in direct connections across the strait being the unwillingness of both governments to allow direct navigation between the two trading economies.

This study focuses on the impact of direct shipments, trade and communications on the continuing industrial development of the island, using questionnaires and industry visits to firms in the navigation and communications sector, a sector comprising of very few firms, in an effort to gain an understanding of the impact of direct business links and shipments on their business decisions. Questionnaires were also dispatched to firms within the manufacturing sector, a sector with significantly more firms, in order to gain an alternative perspective of the expected impact of direct shipments on their business decisions. Input-Output Analysis is used to simulate the changing pattern of outward investment into China and its subsequent impact on domestic output, income and unemployment, once direct shipments are agreed between the two economies and put into place. A CGE-GTAP model also simulates the impact of the decline in shipping costs on trade and the macroeconomy in Taiwan after direct shipment links are established.

The main findings of this study are:
(i) the taxation system and the finance and insurance support provided by South Korea for its current overseas direct investment, trade, navigation agreements and investment protection provide good examples for Taiwan to follow;
(ii) according to respondents from the manufacturing sector, as a result of direct links, 63.21% of all investment in mainland China would remain unchanged. For those firms that are likely to be influenced, investment would increase by 6.7%; however, huge differences are apparent between different industries;
(iii) responses to the questionnaires also indicated that cargo shipment costs would be expected to decline, on average, by 14.56%, whilst passenger shipping costs would fall by 27.12%;
(iv) the opening up of direct trade, shipment and communications links would cause an inflow of R&D personnel into the mainland, and a corresponding increase in
those products manufactured within the mainland by Taiwanese businessman and sold back to Taiwan;

(v) the 6.7% increase in investment in the mainland would cause domestic output and income to fall by NT$8,687 million and NT$2,348 million, respectively, and a rise of 3,193 in the number of unemployed workers;

(vi) the CGE-GTAP model demonstrates that the decline in transport costs from direct shipments would result in terms of trade, and the ratios of real GDP, social welfare to GDP and trade surplus to GDP, all being higher in Taiwan than in the mainland, which, from a macroeconomic perspective, is to Taiwan’s advantage.

The policy suggestions provided by this study include:

(i) the government should refer to the experiences of South Korea, particularly with regard to the shift from indirect to direct trading and investment with mainland China, as well as direct navigation links. Both economies on either side of the Taiwan Strait should seek to establish a bilateral trade and investment protection agreement, and the Taiwanese government should also adopt measures aimed at providing financial support for overseas direct investment;

(ii) the government should also seek agreement for direct communications with mainland China’s postal and telegraphic sector, in order to improve the overall competitiveness of Taiwanese industry;

(iii) since manufacturers may move into the mainland much more quickly once agreement is reached on direct shipments, the government has a responsibility to boost manufacturing output by seeking out new fields of investment in the areas of R&D, marketing, income and employment;

(iv) improvements in aviation are currently more meaningful than improvements in navigation; that is, seeking out ways of establishing the better carriage of passengers is currently of greater importance than seeking improvements in cargo shipments. The government should therefore actively seek to sign aviation and navigation agreements with the mainland, exempting current taxes and recognizing the licensing of personnel, airplanes and ships issued by the other parties; and

(v) for those industries requiring the use of mainland resources and materials in order to develop, the government should aim to assist these manufacturers to establish a real presence in the mainland, whilst nevertheless encouraging them to retain their R&D, design, logistics and marketing in Taiwan.

RESEARCH


Through an examination of the industrial technology policies and strategies applied within the Nordic countries of Finland, Sweden and Denmark, this research aims to outline the implications of the policies adopted by these countries, and their potential for driving the high-tech sector in Taiwan. The study comprises of four distinct sections: (i) examination of the background and performance of the high-tech policies adopted by the three Nordic countries; (ii) the industrial R&D policies adopted by these countries; (iii) the diffusion and transfer of technologies; and (iv) a number of example case studies.

This research adopts Porter’s diamond theory, with some modifications, to analyze the strategies applied by the Nordic countries as a means of raising the industrial competitiveness of the high-tech sector, and begins by stressing the importance of R&D investment and human capital accumulation. It goes on to further analyze the mobility of skilled labor and the inflow of other foreign labor into the Nordic countries.

The study then outlines the use of science parks to formulate high-tech clusters in order to enhance the competitiveness of the overall market. Finally, the study stresses these countries’ demand side policies, in terms of the promotion of their domestic market scale and the reduction of market barriers to new entrants.

Drawing on the experiences of the Nordic countries, the study concludes by providing a number of policy suggestions involving human resource management and development, cooperation between the industrial and academic communities, industrial clustering, the promotion of market and demand side competition and international technological cooperation.


Intellectual Property Rights (IPR) have become increasingly important in the era of the knowledge-based economy, enhancing business value and increasing competence and competitiveness. The construction of an effective IPR market system, which includes valuation, trading and financial institutions, will help enterprises to commercialize their IPR and to realize their business value. This study therefore analyzes the major IPR valuation, trading and financial institutions of Europe (mainly Germany), Japan, Korea and the US, whose experiences may provide some lessons for Taiwan.

In Germany, most valuations and transfers are through the research institutions as opposed to market operations, but with the IPR market system in the US having seen rapid growth since the 1980s, Japan and Korea began to develop their own market system after the late-1990s learning from this system. Based upon the experiences of these nations, this study suggests that in order to promote IPR commercialization in Taiwan, the government should provide assistance in terms of: (i) creating a platform for the circulation of IPR and linking this to related trading institutions; (ii) setting up an IPR valuation association for valuation training and related research; (iii)
providing technology credit guarantees based on professional valuation reports; and (iv) building up an IPR database which should be open to the public.

**Measures for Promoting Taiwan as a Multinational Regional R&D Center, Meng-chun Liu, Shin-Hong Chen, Yuh-Jun Lin, Ming-Jr Wu, Shiang-Ting Chiu, 31 December 2002**

As a result of the globalization of production and markets, ever since the 1990s, multinational corporations (MNCs) have been aggressively pursuing international R&D. The abbreviated product life cycles brought about by increased market competition has forced MNCs to relocate parts of their R&D overseas in order to take advantage of foreign resources, including cheaper labor and foreign technological knowledge.

This study sets out with a three-fold purpose, beginning with an examination of the trends in international R&D and the attributes of MNCs. The study continues with analysis of the strengths and weaknesses of the R&D environment in Taiwan, and explores the barriers faced by MNCs hoping to undertake R&D in Taiwan. Finally, drawing on the findings of these analyses, the study provides a number of suggestions for policy measures that could help the government to encourage MNCs to upgrade their local R&D functions into regional mandates.

Through the use of questionnaire surveys, interviews with foreign companies, and a government databank, this study aims to highlight the island’s solid capabilities in production management, accumulated from its extensive OEM experiences, as the main locational advantage for the construction, by MNCs, of regional R&D centers in Taiwan.

The functions of established R&D centers in Taiwan include innovations in products and production processes, as well as regional training and technology support bases. However, the limited scale of the domestic market and the lack of R&D labor resources are significant barriers to the establishment of offshore R&D bases in Taiwan by foreign firms. Furthermore, the regulations imposed against travel into Taiwan by scientists from mainland China, and the lack of international thinking and language capabilities of R&D workers in Taiwan, impose considerable costs on MNCs in terms of the coordination of their cross-border research.

Based on a modified model of Dunning’s FDI theory, this study suggests that if Taiwan is going to be able to establish new locational advantages for itself, then the government will need to adopt practical support policies. First of all, income tax exemptions could be used to attract migrant R&D labor, and to mobilize venture capital to construct ‘spin-off advantages’, providing foreign R&D teams which suffer from a shortage of cash flow with financial support, and helping them to complete their projects in Taiwan. The eventual purpose would be to import high quality R&D labor from overseas. Secondly, expanding the R&D infrastructure in Taiwan can effectively help multinationals to reduce their R&D costs and reduce the amount of time spent on innovating products and processes. Thirdly, by reducing the barriers to the hiring of mainland scientists by Taiwanese-based firms, the government could help MNCs to reduce the costs involved in coordinating their overseas R&D, whilst simultaneously solving the problem of the R&D labor shortage. Finally, this study stresses the advantages of proximity to the Chinese market as Taiwan’s niche for the building of regional R&D centers by MNCs. From a policy perspective, the government should promote Taiwan as a target for the regional operation bases of MNCs in order to highlight the comparative advantages of many of Taiwan’s R&D subsystems.

**The Study of Commercial Policies in the Advanced Countries, Da-Nien Liu, Pei-Chang Wen, Shio-w-te Lin, Wen-Hsiao Chang, 31 December 2002**

This study examines the commercial policies adopted by advanced countries, and using the experiences of the US, the European Union and Japan, suggests that future commercial policy in Taiwan should be designed on a more globalized, knowledge-based and value-added basis. First of all, the government must improve the domestic business environment by building up special zones as material flow centers, reforming land use regulations and providing greater tax incentives to encourage commercial activities. The upgrading of operational technology in the business sector, including enhancements to the educational capability of workers, effective protection of intellectual property rights to stimulate more innovative activity and improvements to the internal structure of enterprises, are also essential. Finally, the study suggests that government policies should focus on upgrading service quality in the business sector, which could be effectively achieved by providing an e-commerce environment.

**Maintenance of the SME Basic Dynamic Database, Su-Wan Wang, Wen-Jung Lien, 31 December 2002**

The construction of the dynamic statistical database on small and medium enterprises (SMEs) was eventually completed at the end of 2001. The database includes 34 indices which can be used to measure technical progress, business management, human capital, financial management and the operational status of SMEs, with each index capable of being classified by different industry, area, capital structure, new firm (or otherwise) and firm size.

The purpose of the current year’s project is to update the data in the database to 2000, or perhaps even 2001. In order to provide relevant information on the development of SMEs, eight indices will be selected to identify the top and bottom 10 industries in 2001, and also their rankings between 1997 and 2000. Instructions on how to apply the results of the database support will also be provided in the manual.

**Helping Businesses to Gain Access to the Capital Market, Ya-Hwei Yang, Yingyi Tu, Grass J.H. Chiu, 31 December 2002**

Businesses need funds to support their operations and their ongoing upgrading and transformation; therefore a sound capital market is crucial if Taiwan is to successfully establish itself as a regional funding center. This study examines overseas funding, the listing of investment holding companies, cash increases as a proportion of capital, specific stocks and the private placement market.
The study finds that in order to allow companies greater flexibility, the criteria for issuance should be relaxed; the number of stocks issued and the cash increase as a proportion of capital should be more flexible; the English information releases should aim to avoid tedious, unnecessary details; the processes involved in the application and reporting system should be simplified and the functions of domestic securities underwriters should be upgraded to international securities company levels.

The different types of investment holding companies should abide by different, but appropriate, regulations concerning IPOs. Furthermore, unless they have the endorsement of a government agency, high-tech holding companies should not receive special privileges; and those government agencies concerned with all economic sectors (not just manufacturing) need to be involved in setting up guidelines for high-tech firms.

Since private placements are still new in Taiwan; reference should be made to the experiences of private placement markets overseas. The regulations concerning IPO disqualification by a private placement company if its issues are incomplete, are too rigid. The experience of Japan, which has a much simpler process to cover cases where the amount of private placement and the ratio of capital share are both relatively small, should be taken as an example for Taiwan. Specific stock issues and cash increases as a proportion of capital should be more flexible, and there should be a reduction in the amount of privileges given to current employees and old stockowners. Furthermore, both the overall application process and ad hoc financial forecasting need to be simplified so as to enable determination of the appropriate time for action. Finally, participants within this market should also be considered as including other diverse agencies, such as pension fund holders.

A Study of Science and Technology Policy, Human Resource Utilization and Effective Budget Allocation, Jiann-Chyuan Wang, Kuen-Hung Tsai, Homin Chen, 31 December 2002

This study sets out with a number of aims, the first of which is to construct indicators and systems for management based on 'Strategy 1' (cultivating the induction and application of technology talents) and 'Strategy 2' (effectively utilizing technology budgets) and the related policy measures pertaining to the National Science and Technology Projects. It also aims to examine the contents of 'The Indicators of Science and Technology', making appropriate adjustments to make these more usable and meaningful, and to match the goals set up in the Sixth National Technology Conference.

The study goes on to undertake analysis of current science and technology policy formulation and evaluation, and provides policy recommendations for the more efficient allocation of science and technology resources by the government. It then continues by conducting an empirical examination of the relationship between government and private sector R&D expenditure and its impact on industrial productivity. The study concludes by exploring the bottlenecks in terms of cooperation (or lack of) between industry and academia, and how Taiwan could take advantage of the related experiences of the advanced countries.