

An Institutional Analysis of DRAM and Flat-panel Display Industries in Taiwan: Policy Implications for Taiwan's National Innovation System

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In search of the institutional constraints of Taiwan's technology and innovation system, the preceded study, which has been conducted between 2013-07-09 and 2013-12-31, focused on the development of flat-panel display (FPD) industry in Taiwan against the context of global competition. It indeed has found a certain number of institutional characteristics that result in insufficient commitment to R&D of Taiwanese FPD firms. However, to claim that these problems are "systemic" and affect the entire Taiwan's national innovation system and thus long-term economic performance, it is essential in the following research to look at whether the IC industry, in particular DRAM, are plagued with similar issues.

Five assumptions are further established, awaiting the following research to confirm:

- (1) Aiming for short-term gains, the Taiwan system has been preferring technology transfer from abroad to establishment of own R&D since the early 1970s, therefore resulting in the overall lack of technological deepening in the Taiwan economy.
- (2) Although the Taiwan officials identified as early as 1974 the significance of both IC and FPD to Taiwan's electronics industry, FPD was completely ignored while IC took most of the national resources to develop. Besides the resource constraint that might have refrain Taiwan from developing both IC and FPD at the same time, another reason is because there was no channel for technological transfer from abroad for FPD until the late 1990s. The reluctance to develop own technology led to the 20-year lag of Taiwan's FPD industry behind global forerunners.
- (3) In favour of "high-tech" sector, Taiwan's industrial policy has created a discrimination system against the non-high-tech sectors, thereby resulting in a distorted industrial structure in Taiwan. In theory, rationale for the discrimination policy is externalities of R&D, which however are not significant in Taiwan's "high-tech" sector.
- (4) Instead of encouraging R&D inputs of the firms, the discrimination policy in Taiwan has become guided interest and thus provides disincentive for Taiwanese

firms to pursue technological rent. Combined with the discrimination policy, the low-threshold entry policy of the government added fuel to the targeted industries (e.g. DRAM and FPD) – this was done without considerations of the size issue and of the critical factor of scale economies in meeting international competitors. Such ill-advised decision could also be resulted from the failure of government officials in integrating different interests of the business society.

- (5) Although the industrial policy in favour of “strategic industries” had been replaced since 2010 by a new one that focuses on R&D encouragement, there may exists loopholes for the firms to continue their reliance on purchasing foreign technology while enjoying preferential treatment of the government at the same time.

In the following research, we shall try to confirm whether these five assumptions co-exist in both DRAM and FPD industries in Taiwan. The instigation shall help establish a solid foundation for further policy suggestions.