



## Columbia FDI Perspectives

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### Knowledge, FDI and catching-up strategies

by

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A recent *Perspective* by Terutomo Ozawa<sup>1</sup> singles out protectionism and foreign direct investment (FDI) as alternative drivers for the take-off phase of catching-up industrialization. This dichotomy neglects the rich and nuanced variety of strategic options revealed by recent successful industrialization experiences. Consider:

- Strong diffusion-oriented science and technology (S&T) capability-building policies focused on specialized small and medium-sized enterprises (SMEs) were key to Taiwan Province of China's industrialization strategy.
- The Republic of Korea focused on fostering learning and the acquisition of technological competence by *chaebols*, so that these organizations could achieve critical mass to compete globally in capital and technology-intensive industries.
- The allocation of public resources to engineering education, technical training and S&T has been critical to the development of scores of highly internationally competitive Brazilian private firms. Brazil's development bank subsidizes consolidations between local private firms, with the goal of achieving economies of scale high enough to engage successfully in R&D competition with multinational enterprises (MNEs).

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<sup>1</sup> Terutomo Ozawa, "The role of multinationals in sparking industrialization: From 'infant industry protection' to 'FDI-led industrial take-off,'" *Columbia FDI Perspectives*, No. 39 (June 6, 2011).

- China's own brand of catching-up industrialization<sup>2</sup> relies heavily on strengthening indigenous enterprises, fostering S&T capabilities (particularly in high-tech sectors) and attracting FDI complying with stringent domestic technology absorption policies.

Key factors in shortening catching-up periods have been:

*Education and training.* Successful catching-up countries have reached record rates of growth in the supply of university graduates, particularly in natural sciences and engineering (most relevant to technology absorption).

*Innovation and technology diffusion.* The Republic of Korea, Taiwan Province of China, Brazil, and China have given high priority to speeding up technological learning, incremental innovation and domestic knowledge diffusion through institutional innovations.

*Entrepreneurship development.* Fostering personnel and technology knowledge flows among research labs, universities and the private sector has helped to bridge imbalances in the supply and demand of S&T and entrepreneurial skills, promoting competence building and fostering efficiency gains. Brazil's government established state-owned enterprises and then privatized them once they acquired the abilities necessary to perform competitively. The strategy supporting the formerly state-owned Embraer was over 60 years in the making, starting with targeted state support of massive education and training, along with learning subsidization.

*MNEs.* These can also help in the catching-up process when favorable domestic conditions exist, particularly regarding technology absorption and capability-building policies.

These strategies often relied on a covenant between the state and the private sector whereby the state subsidized technological learning and orchestrated the levers -- financial, external, fiscal, regulatory, and institutional -- conducive to the effective exploitation of the outputs of such learning for production for world markets, while the private sector achieved sustainable standards of technological mastery and international competitiveness through increasing R&D, innovation and training efforts. Clear and effective rules applied so that the goals sought were achieved within specific timeframes.

FDI played a significant role in catching-up industrialization in some cases (China, Brazil). However, on the whole, FDI flows *did not lead, but rather were led* by host country policies and strategies.<sup>3</sup> Understanding the role of FDI in host countries first requires grasping the underpinnings of host countries' strategies, policies and institutions. Hence, FDI should not be seen as entirely exogenous, nor should *infant development policies* be considered as necessarily non-WTO compliant or antagonistic toward FDI.

Actual policy focuses ranged from domestic SME development (Taiwan Province of China) to fostering *chaebols* (Republic of Korea), from indirect state incentive orchestration (Republic of

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<sup>2</sup> Carlos A. Magarinos, Long Yongtu and Francisco Sercovich, eds., *China in the WTO: The Birth of a New Catching-Up Strategy* (Hampshire: Palgrave Macmillan, 2002).

<sup>3</sup> Alice H. Amsden, *The Rise of the Rest: Challenges to the West from Late-Industrializing Economies* (New York: OUP, 2001).

Korea) to “market socialism” (China) and from heavy reliance on FDI (China, Brazil) to arm’s length technology deals with MNEs (Taiwan Province of China), including various blends of the strategies above. Commonalities include a capability-building focused strategy, the subsidization of domestic learning processes and the promotion of domestic entrepreneurship and export-orientation, along with episodes of import-substitution, which for the most part, when successful, were turned into export-oriented ventures and, when unsuccessful, were phased out. The key to such policies today is the building and strengthening of domestic knowledge systems and the promotion of an internationally competitive private sector capable of embarking upon *sustainable* innovation trajectories.

The issue is not, therefore, whether MNEs are on board, but rather whether domestic pre-conditions are met so that MNEs can effectively contribute to sustainable catching-up development -- through FDI or otherwise. Accelerated international technology diffusion rates associated with FDI and information technology breakthroughs have *not* made lengthy domestic technological development efforts redundant, and subsidizing domestic learning processes is normally indispensable and not necessarily inefficient. Yes, catching-up has become faster over time; but costly endogenous learning processes are not passé. Sweeping leapfrogging alternatives are not available.

Without domestic absorption and innovative capabilities, little if any advantage can be taken of international knowledge flows, either through FDI or otherwise. *Infant development policies* are naturally -- not paradoxically -- consistent with outward integration.

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