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Developing countries since World War II have been engaged in a process of industrialization that is distinctly different from previous industrialization processes. In the first industrial revolution in England, the market was the catalyst, while in the second in the United States and Germany, the control of pioneering technology was the lever that gave leading enterprises their competitive advantage. Late industrialization in developing countries, however, must proceed on the basis of borrowed technology, not innovation, and their competitive advantage is largely reduced to lower wages. Contrary to neo-classical economic theory, low wages are not a sufficient condition for industrialization. This book chapter explains why higher levels of government intervention, such as that in South Korea and Taiwan, are necessary for industrialization to take place, a strategy that stands in contrast to the market-led prescriptions for reducing state intervention in developing countries. It further examines the conditions that have led to successful state-promoted industrialization and finds that relatively equal income distribution is a critical factor.

Late Industrialization

"As late industrialization has unfolded, it has become clear from observing its 'leading sector' – cotton textiles – that low wages are no match for the higher productivity of more industrialized countries." (53) Even in Korea and Taiwan, where wages were very low, and education and infrastructure relatively developed thanks to foreign aid, leading textile manufacturers still could not compete with Japan's more productive cotton textile industry. "Under these circumstances, and *a fortiori* in industries requiring greater skills and capital investments, governments have to intervene and deliberately distort prices to stimulate investment and trade. Otherwise industrialization won't germinate." (53) This is not a case of "market failure," but necessarily involves state intervention in the process of getting the prices "wrong."

In late industrialization, governments must subsidize key industries for them to achieve international competitiveness, which was far less true in the industrialization of Germany and the United States. There, subsidies were only needed during the time lag between the stages of innovation and commercialization, after which the competitive advantage of the new technology could be expected to ensue. Not so for late industrializers, which suffer from the virtual impossibility of internationally competitive innovation and the near-total dependence on technology transfers. The institutionalization of research and development in multinational enterprises created effective entry barriers to outside innovators, a condition German and U.S. firms did not face. This allowed them to leapfrog their more established British competitors.

In late industrialization, economists argue that low-wage countries should be able to compete internationally in labor-intensive industries using borrowed technology. But the evidence suggests otherwise, with success determined largely by heavy government intervention in the form of subsidies and protection. South Korea's automobile industry received heavy subsidies for at least 30 years, during which time foreign cars were scarcely seen in Korea.

Nor have we seen a closing of the productivity gap between developed countries and late industrializers, which prevailing economic theories would predict. Instead, productivity gaps have widened, further undercutting developing countries' comparative advantage in cheap labor. Also reducing that competitive advantage is the presence of low-wage sectors in high-wage developed countries.

It has been found to be empirically true for advanced capitalist countries that the lower a country's productivity level the faster will be the productivity growth rate. Though the same is assumed to be true for late industrializers, the evidence suggests that it is not. Obviously, this theory of industrialization only works above a certain threshold of development; below it the laws of industrialization change. Under those laws, there is no reward for low productivity, technology transfer cannot close the large productivity gaps, and "lower wages are generally inadequate to overcome the penalty of lateness." (56) This is true even considering the strategy of reducing real wages through foreign exchange rate devaluation. In practice, there is a physiological or political limit below which real wages cannot be reduce through devaluation.

Without low wages as the competitive asset needed to trigger late industrialization, market theory is robbed of an effective mechanism for industrialization. Market theorists, therefore, resort to the tautology of "market failure," arguing that "market distortions" prevent industrialization from taking place. In fact, the theory is flawed. "Late industrializers have faced far easier conditions of technology transfer and far more competitive downward pressures on their wages ... than in previous industrial revolutions. Yet they have still found it extremely difficult to industrialize – precisely because markets have been working, not failing." (59)

Government Intervention as Catalyst

This opens the door to the argument that government intervention is the necessary catalyst for late industrialization. In assessing the role of such intervention it is important to gauge whether its benefits exceed its costs. For market-oriented economists, the post-independence state in the developing world "is corrupt to the point of aborting economic development," (60) making the costs of government intervention far outweigh the risks in virtually every case. This assumption is not supported by evidence on how states have operated. The evidence suggests that in those countries where industrialization is possible, corruption ("rent-seeking") may persist but not necessarily to the point of derailing industrialization. "This is because in the long run ... rent-seekers can probably enrich themselves more by sustaining a systematic process of capital accumulation (through savings and investment) than by ransacking the economy in the short run through gross misappropriation of revenues." (60)

The evidence suggests that in many of the poorest countries corruption has indeed undermined effective state intervention in economic development. "On the other hand, the fastest-growing late-industrializing countries – South Korea, Taiwan, Singapore, Thailand, Malaysia, and, to a lesser extent, Japan ... – have all had extensive government intervention and highly active industrial policies." (60-61) One of the keys to success in the latter countries is that subsidies have not been giveaways but rather have been allocated in exchange for specific performance standards, including output, exports, product quality, investments in training and research and development. Performance standards raise productivity, increasing cost-competitiveness and making such subsidies more affordable than they would be otherwise. Performance standards discipline not only private enterprise but also the state, whose bureaucrats can be judged by the same criteria as business.

"In all late-industrializing countries, the state has disciplined labor, driving wages down as far as politically possible. What accounts for differences in rates of growth of industrial output and productivity among late-industrializing countries is not the degree to which the state has disciplined labor but the degree to which it has been willing and able to discipline capital. The discipline of capital constitutes a major factor in the success or failure of state intervention in late industrialization." (61)

In addition to the above, there are other factors to consider in determining the success or failure of late industrialization. First, while there has been some of the expected movement of multinational companies' more labor-intensive production to developing countries, such investment is not generally the catalyst for industrialization. Rather, government intervention and subsidization have transformed such investment into an industrialization process. Generally, direct foreign investment is a relatively small fraction of capital formation in that process, and it often lags behind industrial growth. More often, such growth has been financed by domestic saving, particularly once growth rates begun to raise domestic incomes. Foreign capital more often takes advantage of those factors that are already producing rapid growth, further accelerating it.

Second, the labor supply is more "unlimited" than it was in earlier periods of industrialization, making the ratio of wages to productivity lower as well. There is a more abundant labor supply because: 1) population growth rates are higher; 2) international migration has decreased dramatically, limiting the relief for excess labor; and 3) trade union organization is more difficult, in part due to political repression and in part due to the absence of dispossessed skilled artisans who were the catalyst for unionization in earlier industrialization periods.

Third, real exchange rates can only be devalued to a limited extent, reducing developing countries' ability to create low enough wages to compete internationally in labor intensive industries. This is partly due to the physiological and political limitations on low real wages discussed earlier and partly because devaluation raises the prices of imported goods, which are a more significant portion of the economy than in earlier periods of industrialization.

Finally, it is critical to subsidize credit below the market-determined rate of interest by offering low real interest rates in key sectors. In South Korea and Thailand, for example, real interest rates were negative due to government intervention in credit markets for much of their industrialization processes.

The Conditions for Success

The question, then, is under what conditions is late industrialization likely to succeed or fail? The evidence suggests the following conclusions:

1. Performance standards for industry must be established in exchange for subsidies. These were successful in both Taiwan and Thailand, for example. In Taiwan, subsidies to exporters in the 1960s were tied to export targets, with exporters penalized if they did not meet goals. By the 1990s, subsidies were conditioned on firms' R&D spending, training programs, and even environmental protection standards.

2. A more equal distribution of income raises the probability of successful late industrialization. This is due to many related factors, including "worker motivation, the expected returns to investments in education, cost-push inflation, the effectiveness of currency devaluations, and other micro- and macroeconomic variables. To the extent that more equal income distribution increases the growth of output and productivity, it makes the state more committed to industrialization and *willing* to impose performance standards on business. In addition, a more equal income distribution makes the state more able to impose performance standards on business...." (73) The quality of government intervention tends to go up the more equal the income distribution. In general, where income distribution is particularly skewed, small elites tend to overwhelm the state's ability to discipline business. In addition, particularly low earnings differentials between managers and workers in industry help motivate both to raise productivity levels. The author's preliminary data analysis suggests that "the variable of income distribution had greater explanatory power by far than other plausible influences on the growth rate of manufacturing labor productivity..." (77) in several late-industrializing countries.

3. Government intervention remains important late in the industrialization process. In fact, where late industrialization has been successful, such as Taiwan, South Korea, Singapore, and even Hong Kong, government intervention remained extensive even as the country entered high-technology industries. "Thus, as late industrializes march closer to the world technological frontier, the relevant question is not when all subsidies should be withdrawn but when particular ones should commence and others cease." (79)