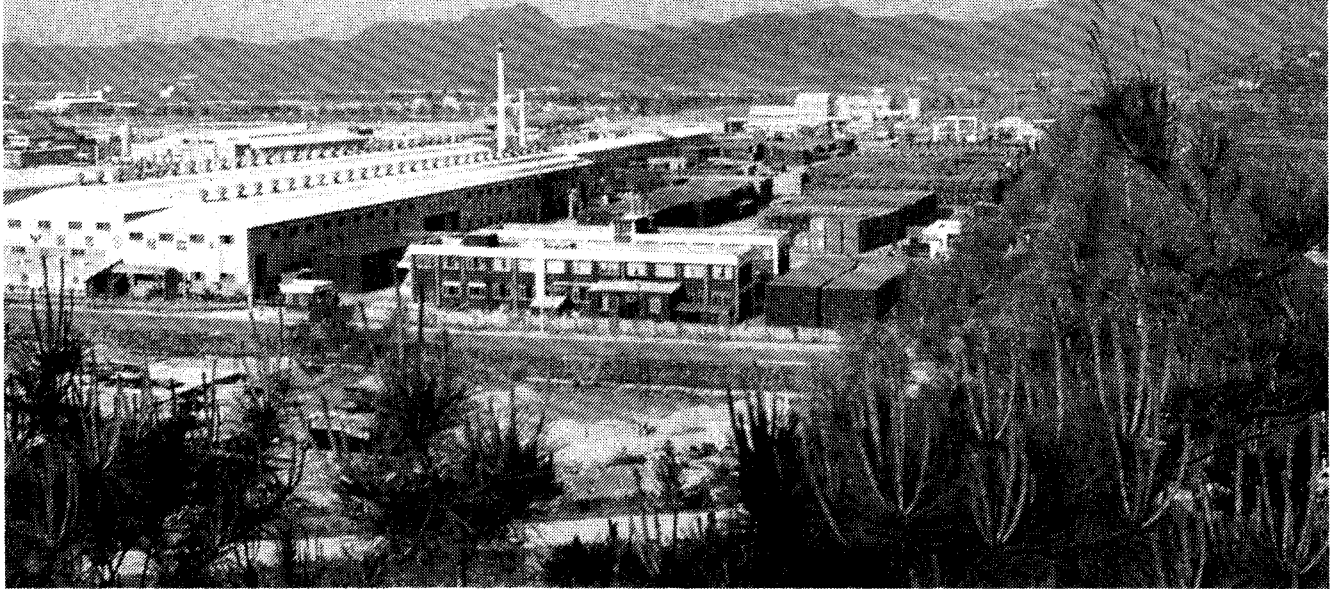


Shock waves of Korea's industrialization how economic development actually works

by Steven Bardwell and Peter Rush



In the zero-growth atmosphere that dominates contemporary economics, cases of successful industrial development have become a serious embarrassment. The most glaring of these cases is that of South Korea, a country which in 1959 was more rural and underdeveloped than India is today, and in less than 20 years completed the initial stages of an aggressive, sustained program of industry-based economic development to become the foremost of the "almost-developed" countries.

Lawrence Klein, the recipient of the Nobel Prize in Economics—and one of the foremost of the school promoting the impossibility of economic development in the Third World—described the fundamental premise of all conventional economics, an assumption which is simultaneously the cause of these economists' inability to explain development, and the justification for policies which ensure underdevelopment:

At any point of time the economic system can be regarded as tending towards a long-run stationary state in which there is no net investment and in

which all existing capital equipment is exactly replaced.

Unfortunately for both the science of economics and the countries retaining the services of economists, this assumption of equilibrium has normative significance for Lawrence Klein and his colleagues. Zero growth, they claim, is not only necessary, it is desirable.

Phase-state change shown

Recent results from the LaRouche-Riemann econometric model demonstrate in a dramatic way the scientific incompetence of the presumption of either the reality or advisability of equilibrium economics.

These results come from a six-month study of the past two decades of the South Korean economic "miracle," and provide a beautiful case study of the interlocked processes of technological innovation, capital investment, manpower development, and industrial growth.

Specifically, the appended computer-generated graphs showing the behavior of the South Korean economy in the period under study tells us what Wharton-style econometrics will never grasp: how an economy goes through a fundamental change of phase-state.

A South Korean container factory.

Courtesy of Hung Myung Industrial Co. Ltd.

Wharton's model will view an agricultural economy and project only an agricultural economy for the future. Yet South Korea's industrial sector rose with the suddenness of an economic shock wave—a term we will define in greater depth below. What competent econometrics has to measure in the period before the shock wave took place is the growing *potential* for such change to occur. That potential for phase-state transformation, *not* the current output of the economy as measured, for example, by gross national product, is the fundamental defining fact about the Korean economy 1960-1980—or about any economy, for that matter. That is what the LaRouche-Riemann model has captured.

Economic history: 1960-1980

The period of the economic miracle in South Korea extends over the two decades from 1960 to 1980, and these 20 years were taken as the time span of the LaRouche-Riemann model analysis. During this time, the Korean economy grew at an average rate of 9.5 percent per year. That is, the real tangible product of the Korean economy increased more than sixfold over those 20 years! This growth was not, however, without interruption and, making provision for three periods of stagnation or regression in the Korean economy, the average actual growth rate approaches 13 percent per year at the times when the policy of the Korean government was directed toward development.

The three extraordinary periods during the course of the period from 1960 to the present are illuminated in a striking way by the LaRouche-Riemann analysis. With three interruptions, the South Korean government was run by a group of Korean nationalists whose commitment to rapid industrialization and urbanization was absolutely clear. This group, in conjunction with the Japanese, forged a policy of industrial investment which directed the growth of the Korean economy with three exceptions:

1963-64: The initial post-1961 economic takeoff was fueled by high rates of capital formation and import growth, the latter providing the machinery and raw materials for Korea's resourceless economy. Under World Bank-IMF pressures to stop a growing (in fact necessary) trade deficit and the burgeoning growth of credit, Korea instituted a drastic financial retrenchment leading to a decline for 1964 in both imports and capital formation.

Figures 1 and 2 show in a striking way the impact of this World Bank pressure in the composition of the economy, which had already by 1963 begun to significantly shift away from agriculture. Figure 1 shows the percentage of the country's gross profit that was produced in agriculture. In 1964 this pattern abruptly shifted.

1970: As we shall see, the period from 1969-1970

was critical for the Korean economy. In 1969-70, under World Bank duress, Korea once again implemented severe Friedman-like credit strictures which drastically reduced both capital formation and imports as in 1964. The long 1965-68 investment program yielded some of its effects during the 1969-71 period in a lag effect, so the economy continued to grow despite the cutbacks.

By 1972-73, the Koreans scrapped the World Bank approach and resumed high-growth development policies until the oil shock hit them. Nonetheless, the lag effects of the 1969-71 lack of imports and investment showed up in 1972-73, yielding a drop in productivity during that period. Had the 1969-71 program been continued, Korea would not have been able to implement the export boost that enabled it to survive the 1973-74 oil price rise.

Figures 2 and 3 show the impact of this policy change. Especially interesting is the fact that the average productivity of the economy actually dropped during the period from 1972-73 as a result of the World Bank policies. That is to say, the World Bank policies of labor-intensive investment actually undermined the ability of a country to continue economic production.

1975: The oil price rise and attendant international economic disruption had predictable consequences for the Korean economy, although it is important to note that the full impact of the disruption was not felt for many months.

The correlation between a central government committed to development and the success of that development is unmistakable. In fact, these three periods of relative stagnation in the Korean economy show that such dirigism is necessary for development. Without that centrally directed investment strategy, a country cannot develop.

Phases of economic development

The Korean economic miracle offers an interesting example of a specific development strategy. The Koreans implemented a differentiated and time-phased investment plan (whether consciously or not), that solved for them the interconnected problems of manpower development and credit generation. They began with a program of heavy investment in infrastructural development, even before this infrastructure was "necessary."

Figure 4 shows the pattern of growth in the construction sector over this time period. Since construction is a substantially labor-intensive sector and hence, has lower than average productivity, an investment of this magnitude in construction requires a willingness to wait for economic returns for up to a decade—namely, the willingness to extend long-term, low-interest credit. Without this credit, infrastructure of the required magnitude (railroads, port facilities, and water works most

Figure 1
Agricultural surplus
 (as percentage of total surplus)

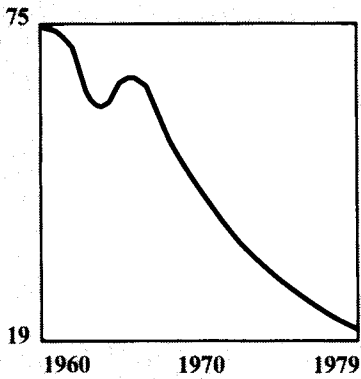


Figure 2
Productivity of total economy
 (ratio of surplus to consumption of productive workforce)

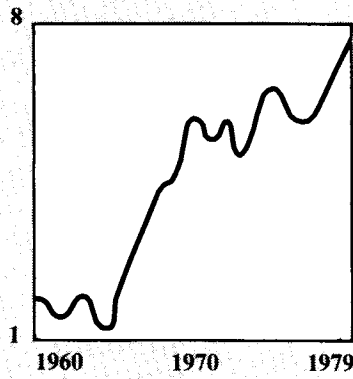


Figure 3
Net capital investment in primary metals
 (billions of 1975 won)

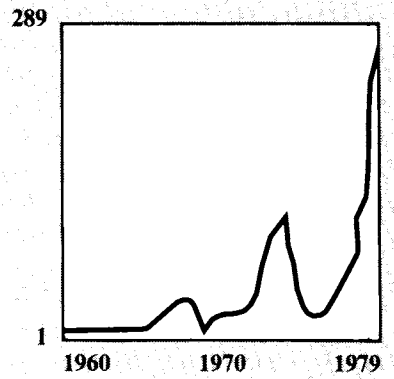


Figure 4
Construction surplus
 (billions of 1975 won)

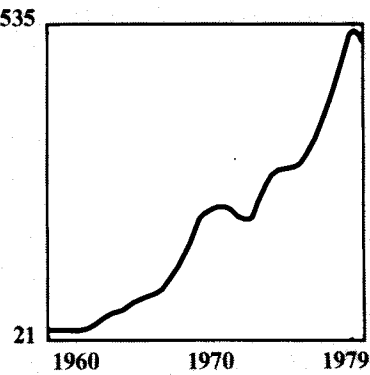


Figure 5
Textiles surplus
 (billions of 1975 won)

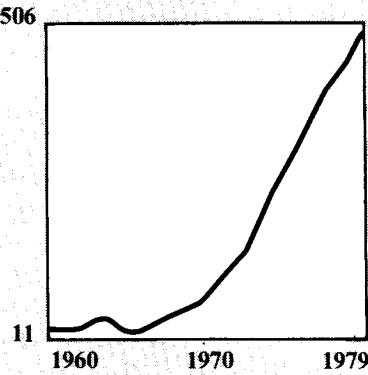


Figure 6
Primary metals surplus
 (billions of 1975 won)

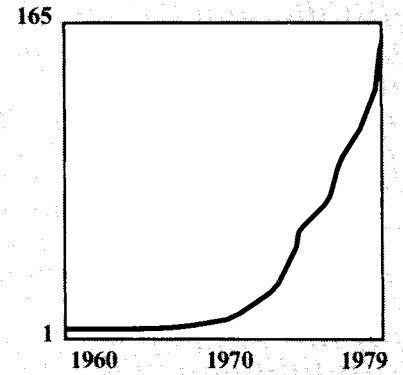


Figure 7
Net capital investment in primary metals
 (as percentage of total net capital investment)

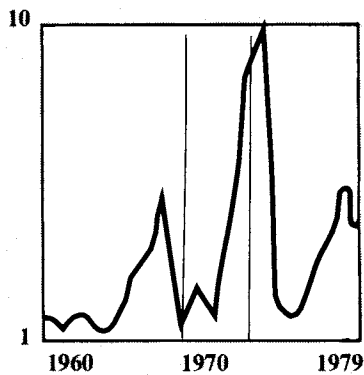


Figure 8
Net capital investment in textiles
 (as percentage of total net capital investment)

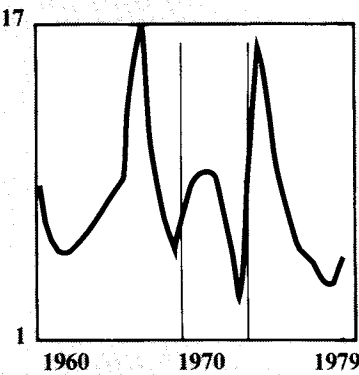
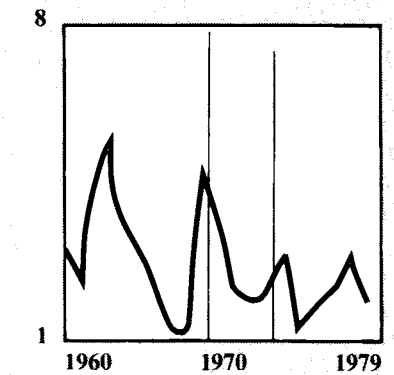
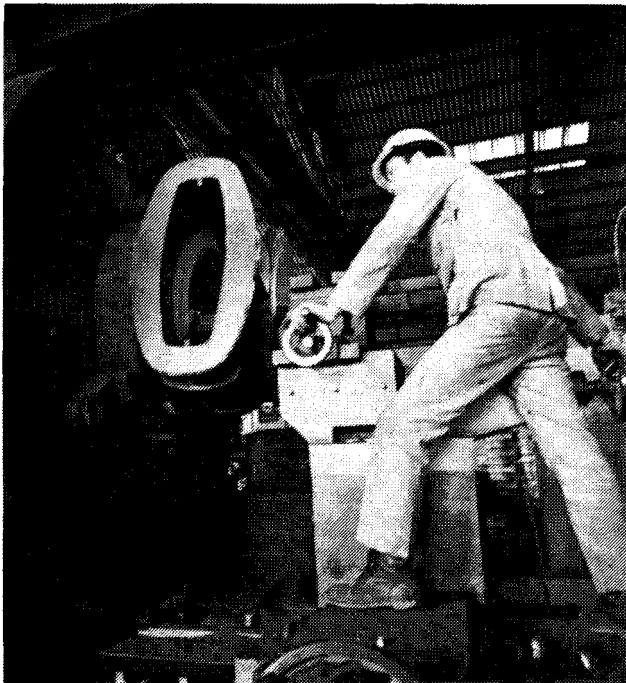


Figure 9
Net capital investment in construction
 (as percentage of total net capital investment)





Courtesy of the Dongkuk Co.

At the Busan Cast Iron Company.

importantly) cannot be built. The Koreans made this investment in the first stage of their program. This large investment had the second rationale of providing an initial pool of skilled and semiskilled workers. These workers formed the basis of the urban work force that would, in 10 years, be the backbone of the Korean urban economy.

The second phase of the Korean development plan began in the middle to late 1960s, when investment in the textile industry began to rise. The sudden onset of this investment is shown in Figure 5, where the gross profit from a sector representative of light industry is shown. Again, this investment was directed in two aspects towards the long-term development of the Korean economy; the large-scale production of textiles provided needed profits and foreign currency, and more importantly, trained the next and larger wave of the work force.

The third phase of the industrialization process as seen in Korea began in 1972, when the gross profit from heavy industry then began to rise rapidly (see Figure 6). Investment in primary metals, as representative of heavy industry, increased by more than 50 percent during this time. The result of these investment policies was an almost monotonic fall in the agricultural component of the economy (see Figure 1) and the urbanization of the work force.

While it certainly is not clear that this sort of phased investment policy is appropriate for all economies, the importance of high investment rates and the economic

destruction of low-productivity agricultural activity is clear.

Shock waves of industrialization

The most exciting result from the LaRouche-Riemann analysis, however, came with the discovery of the first empirical example of an “economic shock wave” which had been predicted two years ago in the initial theoretical work on the model. The 18-month period during 1969-1970 shows a dramatic and almost discontinuous change in a number of key parameters for the Korean economy. This period falls at the end of a relatively long period of development and bears all the signs of a shock wave—it is the result of a self-accelerating process of investment which, at a certain well-defined point, “breaks” like an ocean wave, leaving its mark on the quantitative parameters measured by the model, a set of violent and rapid shifts. Figure 7-9 along with Figure 1 show that the shift from agricultural to industrial, rural to urban, occurred in a final way during this short period.

The quantitative indicators of the shock wave appear in almost every sector: construction’s contribution to the economy more than doubled in this 18-month period (reflecting the payoff of previous investments), but new investment in construction dropped dramatically, reflecting the new stage of the economy with an essentially adequate infrastructural base. Investment in primary metals jumped by a factor of three, while investment in textiles fell by almost as much. The contribution of agriculture to the whole economy, while it rose in absolute terms, experienced an accelerating drop in relative terms.

All of these indicators point toward the sudden appearance of a nearly developed economy. The shift from rural to urban, from agricultural to industrial, and from labor-intensive to capital-intensive, has not been completed, but after 1970 it became essentially irreversible.

This phenomenon is not unique to Korea—the process of industrial development and technological innovation is inherently discontinuous precisely because it is self-accelerating. For the same reasons that a sonic boom forms, an ocean wave breaks, the dynamics of industrial development create a sharp boundary between urban and rural economies, as an example.

This phase change occurs *because* a shock wave of technological innovation and capital-intensive investment has passed through the economy. The central role played by qualitative change in economies is ignored by conventional economists because it turns out to be mathematically equivalent to the assumption of the inherent *non-equilibrium* nature of economic change. If an economy *can* change, then it *must* do so in jumps. If it *cannot* change discontinuously, then it will collapse.