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Mexican Food System

In this day and age events sometimes move faster than editors. The Mexican Food System (SAM) mentioned in John Walsh's article on Mexican agriculture (News and Comment, 18 Feb., p. 825) was in fact abandoned in January as a part of the Mexican government's budget cutting.

PHILIP RUSSELL

Colorado River Press, Box 7547, Austin, Texas 78712

The Long Wave

David Dickson's discussion of the economic long wave or Kondratiev cycle (News and Comment, 25 Feb., p. 933) provides a good summary of the innovation theories of the long wave that have emerged since the stagnation of the late 1970's. There is no doubt that renewed emphasis on basic research and R & D are important ingredients for economic revitalization. However, vigorous stimulus of research is not a sufficient response to the current crisis.

Since 1975 the System Dynamics National Model (*1*) has provided an increasingly rich theory of the economic long wave. As mentioned in the article, the theory is not based solely on innovation but integrates many factors hypothesized by others as the prime mover in the long wave, including innovation, labor dynamics, price movements, financial and monetary policy, capital accumulation, international trade, and even political value shifts (*2*). The core of the theory, however, is the idea of capital "self-ordering"—the fact that in the aggregate, the capital-producing sector of the economy must order capital plant and equipment from itself in order to increase capacity. To illustrate, consider the situation after World War II: the nation's capital stock and infrastructure were old and severely depleted after 10 years of depression and roughly 5 years of wartime production. As the demand for consumer goods, services, and housing rose, manufacturers of capital plant and equipment had to expand their own capacity, further swelling the demand for structures, equipment, materials, transportation networks, and other infrastructure, and also boosting wages, encouraging more capital-intensive technologies. This self-reinforcing feedback stimulated further expansion of investment and started the boom of the 1950's and 1960's. In order to both satisfy long-run demand and rebuild the capital and infrastructure, the capital-producing sector had to expand beyond the long-run needs of the economy. By the late 1960's, the capital stock had been largely rebuilt, and investment began to slow to a level consistent with replacement and long-run growth. Excess capacity and unemployment began to show up in basic industries. Faced with excess capacity, investment in these basic industries was cut back, further reducing the need for capital and reinforcing the decline in investment as the economy moved through the 1970's and into the 1980's. Because physical capacity and infrastructure are quite long-lived, the excess capacity developed in the long-wave expansion continues to depress investment (and hence aggregate demand) long after output falls.

Simple formal models incorporating the self-ordering mechanism and rational decision rules for managing investment and production can generate the long wave without any technological change (*3*). As discussed by Forrester (*4*) and Graham and Senge (*5*), commitment to the existing technological base depresses innovation during the expansion phase, but during the downturn, as the old infrastructure is written off the books and physically depreciates, new technologies become more attractive. Thus in contrast to the "innovation hypothesis of the long wave" favored by the neo-Schumpeterian school, the national model suggests that a "long-wave hypothesis of innovation" better describes the situation.

Freeman and other long-wave theorists are correct that the current depression is not an ordinary trough in the business cycle. But while stimulating basic research and training the labor force for "new-wave" technologies are important, innovation alone will not be sufficient to lift the economy into a sustained recovery as long as excess capacity in basic industries continues to depress investment (*6*). Indeed, in the early years of the high-tech boom here in Massachusetts, many companies chose to rehabilitate unused mill and warehouse space rather than build new. Only after the stock of excess space was drawn down did construction of new facilities catch up to the expansion of the high-tech industries. The Japanese policy of planned capacity reductions and worker retraining in the aluminum and shipbuilding industries (*7*) provides an example of an effective response to excess physical capacity.

JOHN D. STERMAN

Sloan School of Management, Massachusetts Institute of Technology, Cambridge 02139

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Lake Erie, Not Lake Huron

Does the recent closing of the University of Michigan's Department of Geography have anything to do with what appears to be Lake Erie on your cover of 25 February being designated as Lake Huron?

CHARLES N. BARNUM

Apartment 902, 1530 Queens Road, Charlotte, North Carolina 28207

Landsat 1 makes vegetation look red and Lake Huron look eerie.

WILLIAM C. DEWEL

Department of Biology, Appalachian State University, Boone, North Carolina 28608

What led you to such a perception?
An eerie misrecollection?
Or was it a twisted neuron
Which caused you to call it Lake Huron?

JAMES A. SCHELLENBERG

87 Heritage Drive, Terre Haute, Indiana 47803