

# Depression and Innovation



**A GREAT LEAP FORWARD:  
1930S DEPRESSION AND  
U.S. ECONOMIC GROWTH**

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The 20 years following World War II saw an extraordinary period of prosperity in the United States. While the business cycle had not disappeared — there were occasional brief recessions — the period is remembered today for its burgeoning middle class, rapidly rising output, and modest inflation. When did the leaps in productivity occur that laid the foundations for this prosperity? During the war? Or perhaps during the boom years of the 1920s?

Economic historian Alexander Field of Santa Clara University argues in *A Great Leap Forward* that the answer is “none of the above.” For Field, the Depression-era decade of the 1930s — despite its financial crisis and unemployment — was a period of greater technological and organizational innovation than either the 1920s or the war years, and one that made a greater contribution to America’s economic development. The 1930s represent a “golden age,” Field says, that “experienced the fastest sustained growth in the material standard of living in U.S. economic history.”

Field draws this conclusion based primarily on rates of total factor productivity (TFP) growth; TFP, a measure of productivity in relation to the supply of all inputs, can be understood (with some exceptions) as a measure of innovation. The numbers are clear: TFP grew faster during the period of 1929–1941 than in other 20th-century periods. Although inputs increased only very slightly, if at all, from 1929 to 1941, real output grew at a rate between 2.3 percent and 2.8 percent annually. Not only was TFP growth higher in the 1930s, it was also broader-based; while TFP growth in the 1920s was almost entirely within manufacturing, in the 1930s it also gained strongly in other sectors, including wholesale and retail, transportation, and public utilities.

No one area of innovation was responsible for the 1930s advance in productivity. A major cause, in Field’s view, was public infrastructure spending, especially the building-out of the highway network; this, in turn, led to a transforming of transportation and distribution through the integration of railroad shipping and trucking. In addition, the decade

brought significant innovations in chemistry and materials that improved equipment and structures and extended their lives. Finally, employment in private research and development in manufacturing more than quadrupled.

Field’s account of the course of progress between the wars is closely argued and firmly grounded in statistics. It is a valuable reminder that the 1930s, although ruinous in terms of unemployment, were far from bleak in terms of technological and business innovation.

At the same time, a closer analysis indicates that much of the TFP growth took place in one year, 1941. Some 30 percent of TFP gain from 1929 to 1941, and 22 percent of TFP gain from its 1933 trough, shows up in that single year. While it’s true that the United States did not enter World War II until the last weeks of 1941, the question remains: To what extent was the concentration of TFP growth in that year a product of President Roosevelt’s prewar buildup, how much of it was due to highway spending and the other phenomena that Field catalogs, and how much of it came from other, unexamined influences emerging in the early 1940s? Field rejects any influence from the buildup on innovation at that point on the basis that “only a small fraction” of total military spending for the war had already been spent.

With regard to the war years themselves, Field concedes that some advances came about through the war effort, such as radar, penicillin production, and atomic energy, but holds that “there is relatively limited evidence of beneficial feedback from wartime production to civilian activity in the postwar period.” Even with regard to the wartime spinoffs, he believes the war may have done no more than accelerate developments that were already on course to happen regardless.

Such an assessment, however, seemingly would require a micro-level study of the development of these technologies and their prewar trajectories, a type of analysis that Field eschews here. The counterfactual question — what would have happened without the war? — is, of course, impossible to resolve conclusively. But it does appear likely that at least some important innovations would have come about much later. Atomic power is one. Another is the commercial production of penicillin, stymied until rescue came from a citric-acid manufacturer, Charles Pfizer & Co. of Brooklyn, which applied its unique fermentation expertise to the problem — a cross-disciplinary breakthrough that would have been unlikely without the exigencies of war.

It goes to show that innovation does not yield easily to quantitative analysis. Nonetheless, *A Great Leap Forward* will no doubt stimulate scholars of the subject for years to come.

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