

Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages

By Carlota Perez. 2002.

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Economists have a fondness for categorizing historic events into phases that permit easier analysis and also reveal the periodicity of similar events that will support

sweeping generalizations about patterns of economic forces. Perhaps the most familiar is the analysis of economic events according to cyclical behavior, together with an analysis of which economic time series turn ahead of, are coincident with, or lag cyclical turning points. Other categories that come to mind are the Kondratieff waves and shorter periodic fluctuations as described by Juglar and Kitchen. And Schumpeter proposed a theory based on the actions of entrepreneurs as a dynamic factor that disturbs economic equilibrium.

In her book, Carlota Perez builds most effectively on Schumpeter's work as a base, binding economic growth and technological transformation to financial capital. She argues that historically technological revolutions arrive with remarkable regularity,

and economies react to them in a predictable fashion. In linking technology to finance, she explains how financial capital flocking into new investment leads to speculative bubbles and financial crises before more harmonious growth emerges.

The author's background is well suited for the research reported in this volume. Carlota Perez is an honorary research fellow in science and technology policy research at the University of Sussex, UK, an adjunct senior research fellow at INTECH, Maastricht, The Netherlands, and an international consultant and lecturer on changing strategies and technology policy based in Caracas, Venezuela.

At the outset, the author defines five broad technological revolutions, or Techno-Economic Paradigms as she calls them, since the end of the eighteenth century. They are listed below, together with the year a major technological break-through initiated the revolution:

- The Industrial Revolution— 1771
- The Age of Steam and Railways—1829
- The Age of Steel, Electricity and Heavy Engineering—1875

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- The Age of Oil, the Automobile and Mass Production—1908
- The Age of Information and Telecommunications—1971

Each of these revolutions has a life cycle of about 50 years and goes through a cyclical pattern. The first stage is the installation period, which has an eruption phase, when a new innovation is introduced and spreads in conflict with old products and technologies. The second is the frenzy phase, when financial capital drives the build-up of new technologies but develops tensions within the system. A turning point occurs, usually with a recession that follows the collapse of a financial bubble, and regulatory changes are made to facilitate and shape the period of development. Then follows a period of deployment, which initially has a synergy phase, when conditions are all favorable for the full flourishing of the new technology, and then the maturity phase, when signs of dwindling investment opportunities and stagnating markets appear.

The author makes the point that no attempt should be made to use a rigid, long-wave interpretation of the five phases within a narrowly defined economic system. Long waves are not economic cycles but much wider systemic phenomenon where social and institutional factors play key roles in first resisting and then facilitating the unfolding of the potential of each technological revolution. Therefore, seeking regular ups and downs in GDP and other aggregate variables should be resisted, along with the idea that such cycles must occur simultaneously worldwide.

The author also distinguishes between financial and production capital. Production capital is closest to the economists' definition of capital—assets used to produce output. Perez focuses not on the amount of

these assets but on the agents and their purposes, that is, the motives and criteria that lead people to perform—or hire others to perform—a particular function in the process of wealth creation within the capitalist system. Financial capital represents the criteria and behavior of those agents who possess wealth in the form of money or other paper assets and whose objective is to make money grow. Production capital embodies the motives and behavior of agents who generate new wealth by producing goods and services and their objective is to accumulate greater and greater profit-making capacity. Financial capital is mobile by nature, while production capital is tied to concrete products. And it is financial capital that invests in the new products and whose activities lead to financial bubbles.

The book is full of challenging ideas but is not an easy read. The style is academic and at times difficult to follow, and this reviewer, at least, wishes synonyms for “paradigm” were used occasionally instead of being constantly repeated so many times in the text. However, for a book that will stretch the imagination, broaden the horizons, and challenge the thinking of the business economist immersed in his daily tasks, this book is worth time invested in reading it.

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