Technological revolutions and financial capital: the dynamics of bubbles and golden ages

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When the Russians launched the first satellite in the 1950s, the Americans responded with a crash programme of skill development. Marie Jahoda calculated that if the rate of increase in this training programme between 1957 and 1963 had been sustained until 1992, there would be two scientists for every man, woman and dog in America (in Freeman et al., 1973). So, it is important to take care not to extrapolate the immediate past into the distant future. The other side of the same coin is that we should not be blind to the lessons of the past.

Carlota Perez's insightful analysis of the rapid growth and diffusion of new technologies in general, and Information and Communications Technologies (ICT) in particular, is a welcome antidote to the bullish and ahistorical hyperbole of the datacom era. It builds on a neo-Schumpterian approach to long-wave cycles pioneered by Chris Freeman and his colleagues at SPRU, the Science and Technology Policy Research Unit in Sussex (Freeman et al., 1982). Briefly, this body of work provided an explanation for the long-wave cycles (approximately 50 years duration) which have characterised the global economy over the past two centuries. It argued – convincingly to this reviewer – that these long cycles were driven by the development and diffusion of new heartland technologies. Although the identification of these heartland technologies wavered as this school of thought developed, there has been general agreement that the most recent cycle has been driven by ICTs.

Perez was a central participant in the development of this theoretical approach, in particular by exploring the social dimensions of what had been until then primarily a description and analysis of the technological components of these cycles. So, what more was to be said, given that the neo-Schumpterians had provided a coherent framework for analysing both the technological and social characteristics of long waves? The missing element was the role played by the financial sector in these developments. During the 1970s, Poulantzian (Poulantzas, 1975) Marxists had drawn a helpful distinction between the financial and productive "fractions of capital" (as had the nineteenth century Marxists) but the substance of this distinction seemed not to penetrate much of mainstream analysis.

This book addresses the importance of this divide between the financial and productive segments of innovating classes in the history of long-waves. It is undertaken in a highly accessible form, and indeed makes no reference to the often-incomprehensible writings of the Marxists of the 1970s. The central argument is as follows:

Long waves consist of four phases. The first of these is that of "Irruption", when the new technology arrives, generally with a "big bang", offering massive potential for use and profit. This is followed by a second phase, involving a frenzy of diffusion and a third phase in which this diffusion is extended. Phase four is one of maturity, when the potential of the previously new technology is diminishing and the gestation period of the new wave begins.

Why the distinction between the second and third phases if they both involve processes of diffusion? The answer is to be found in the disjuncture between financial and productive capital. In the first phases there is a close correspondence between their interests. But towards the latter part of the second phase they move out of synch – finance capital gets locked into wild speculation and we observe bubble-economies – the dotcom bubble of the late 1990s, and the bubbles of earlier long cycles (for example, canal mania and railway mania). This leads to a period of crisis – the Great Crash of the late 1920s, the dotcom collapse of the past few years – a turning point in which there is a recoupling between the needs of productive capital which now in the third phase harnesses a more modest financial sector for its own needs. Then, in the fourth phase, as the cycle matures, financial capital begins to separate out from the dominant technological paradigm and to search for new opportunities, facilitating the gestation and irruption of the new cycle.

Is Perez correct? Yes, I think so. Is the argument original? Yes, again – in this reviewer's view, there has been little of insight offered to explain the systemic and temporal characteristics of the dotcom bubble (even though many of us could see that it would be a short-lived phenomenon). Is it relevant? Yes, again, and not just to academic analysts of innovation processes. The financial captains – in Tom Wolfe's memorable phrase, "the Masters of the Universe" – would be well served by this dose of history. So, too, would the leaders of productive capital, as they struggle to add value in a frenzy of financial speculation. And as for policy-makers, the answer is obvious – Perez's insights are not just important; they are urgent, and call for the re-regulation of financial capital in the contemporary period. Please take notice…

Two final plaudits before we note a couple of weaknesses. First, perhaps because she is writing in a developing economy, Perez does us all a good service by pointing to the distributional patterns in the evolution of these long-cycle – for example, in the contemporary period, "Frenzy [the second phase] is thus a time when rich get richer and the poor get poorer" (p.100). This focus is carried through in the analysis of each of the phases. Secondly, Perez brings politics to the table. She argues that the crisis between the second and third phases does not sort itself out automatically. It involves a great deal of pain – in extreme circumstances perhaps even a war. But its precise course is not pre-determined – it is subject to control and intervention. At this point of global insecurity and poverty it is important to keep the malleability of the political process in our minds. It *is* possible to mitigate the painful and damaging circumstances of transition, and this places a responsibility on all of us, since we are not merely academic analysts and practitioners but simultaneously also global citizens.

And the weaknesses (or perhaps some are strengths)? There is a fair amount of repetition in what is in fact rather a thin book (170 pages). This reviewer found this helpful – by the end I was convinced that I understood the argument! Perhaps more problematic is the all-encompassing nature of the theory – one has the sense in reading the text that everything is explained by the theoretical analysis, in fact too much. For example, even though Perez observes that “specific historical conditions can significantly deviate from the basic model”, she follows this immediately with the comment “but [they can] still be explained by the relationship between technological opportunities and the behaviour of productive and financial capital” (p.121). I even expected to find an explanation for why my favourite football team has done so badly – is it because they floated on the stock exchange?!

Do read the book. It is important. It is accessible. It is well presented. Its also fun.

References

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