

Schumpeterian Business Cycles, Firm Strategy, and the Emergence of a Sixth Technological Wave

Cesar K. Santaella¹

Abstract

Most business leaders treat economic cycles like weather—something to be endured, with sunny expansions followed by inevitable rainy recessions. They wait for clear signals, then react. This is a costly mistake. Drawing on Schumpeterian cycle theory and the latest research on the emerging Sixth Technological Wave, this article argues that the most valuable strategic moments occur precisely when the fog is thickest. While the vast majority of firms remain "cycle-responsive"—cutting costs in downturns and investing only after recovery is obvious—a statistically rare but disproportionately successful minority pursue countercyclical innovation. Today, as Artificial Intelligence, Green Intelligence, and new carrier branches like energy and mobility converge, we may be standing at the fault line between the exhausted Fifth Wave (ICT) and an uncertain but potentially transformative Sixth Wave. For startups, this is not merely an academic debate. It is a strategic map. The firms that will define the next decade are not those that weather the storm, but those that learn to sail into it—alert, adaptable, and willing to destroy their own offerings before someone else does.

¹ PhD @ Innovante Consulting – cesar.santaella@alumni.usp.br

Schumpeterian Business Cycles, Firm Strategy, and the Emergence of a Sixth Technological Wave

Introduction

You can feel it, can't you? That strange, uncomfortable tension in the air. On one hand, we are told that artificial intelligence is rewriting the rules of production, that green technologies are reshaping trillion-dollar industries, and that we are on the cusp of something unprecedented. On the other hand, markets are jittery, capital is expensive, and the easy growth of the last decade feels like a distant memory.

This is not confusion. This is the fog before the wave.

The Austrian School of Economics, through the lens of Joseph Schumpeter, offers a name for what we are experiencing: the transitional phase between technological waves. The Fifth Wave—driven by information and communication technologies (ICT), the internet, and mobile computing—has entered its mature phase. Productivity gains are diminishing. Innovation has become incremental. And the financial super-cycle that inflated tech valuations is showing signs of strain.

Now, the usual suspects are doing what they always do. They are waiting. They are cutting costs. They are postponing investment until the macroeconomic picture clears. But the macroeconomic picture never clears in real time. By the time the recovery is obvious, the most valuable positions have already been taken.

This is the central, painful, and exhilarating lesson of Schumpeterian business cycles: The market does not reward the cautious. It rewards the early.

In the pages that follow, we will explore why most firms remain trapped in reactive, adaptive strategies—and why a small minority break free. We will look at the emerging evidence for a Sixth Technological Wave, driven not only by AI but by the convergence of digital and environmental innovation, what researchers now call "Green Intelligence." And we will argue that for startups, the very uncertainty that paralyzes incumbents is your greatest strategic asset.

The "perennial gale" of creative destruction is blowing. The only question is whether you will be destroyed by it—or become the wind.

1 Schumpeterian Business Cycles and Firm Behavior

The Schumpeterian theory of business cycles conceptualizes capitalism as an inherently dynamic and discontinuous process driven by innovation rather than equilibrium adjustment. In contrast to neoclassical approaches, which interpret

cycles as deviations from a steady-state growth path, Schumpeter (1939) defines cycles as endogenous outcomes of clustered innovations, mediated by credit expansion and followed by phases of imitation, saturation, and crisis.

Within this framework, firms are not homogeneous agents reacting symmetrically to macroeconomic fluctuations. Instead, Schumpeter distinguishes between a relatively small group of innovative entrepreneurs—responsible for introducing “new combinations”—and a majority of firms operating within what he termed the circular flow, characterized by routine production and adaptive behavior. As a result, cycles reshape competitive environments, but only a subset of firms actively shape the cycles themselves.

Empirical research largely confirms this asymmetry. Studies examining firm level responses across business cycle phases consistently show that most companies adjust investment, leverage, and operational strategies responsively rather than proactively, reacting once the macroeconomic phase becomes observable rather than anticipating the technological shifts underpinning it (Vassolo and Forstner 2025). Evidence from Brazilian publicly traded companies demonstrates that capital structure and performance indicators vary systematically across Schumpeterian phases—expansion, recession, depression, and recovery—yet these adjustments remain predominantly *ex post* responses to economic conditions rather than forward looking strategic repositioning.

This pattern aligns with evolutionary and Neo Schumpeterian interpretations, which argue that bounded rationality, uncertainty, and organizational inertia limit firms’ capacity to act on long term technological foresight. Consequently, business cycles function more as selection environments than as signals that firms strategically internalize in advance.

2 Technological Trajectories and Strategic Adaptation

The literature on technological trajectories provides a crucial bridge between Schumpeterian cycle theory and strategic management. Technological change is not random but follows path dependent trajectories shaped by cumulative learning, sunk investments, and institutional constraints. Within these trajectories, strategic choice is often constrained by firms’ historical capabilities and positions within industry structures.

Early contributions emphasize that firms’ strategic responses to technological change are conditioned by their location along a trajectory rather than by abstract optimization (Dosi 1982). Empirical studies in this respect (Santaella 2000) analyzed technological trajectories and strategic behavior in some industries, and had found that firms predominantly adopt adaptive strategies, aligning with dominant

technological paradigms instead of attempting radical departures. Strategic differentiation emerges mainly during periods of structural disruption, when established trajectories lose coherence and new technological paths become viable.

This finding resonates strongly with the Schumpeterian view of cycles: radical innovation tends to cluster during transitional phases, while periods of expansion are marked by imitation and incremental improvement. Santaella's and other later Neo Schumpeterian works shown that strategic proactivity is both risky and unevenly distributed, reinforcing the idea that most firms remain trajectory bound until external or systemic pressures force realignment.

3 Strategic Management under Schumpeterian Cycles

Recent strategy literature increasingly applies Neo Schumpeterian insights to firm behavior under cyclical volatility. Rather than treating recessions solely as demand shocks, this strand interprets downturns as moments of competitive resorting, during which existing routines are destabilized and new organizational forms can emerge.

A growing body of work demonstrates that firms pursuing countercyclical innovation strategies—particularly sustained R&D investment during downturns—exhibit higher long term survival rates and superior post crisis performance. Evidence from European and East Asian firms suggests that innovation oriented enterprises are more resilient during recessions, benefiting from reduced opportunity costs and weakened incumbent resistance once growth resumes.

Nevertheless, such proactive behavior remains statistically exceptional. The dominant strategic pattern continues to be cyclical responsiveness: firms cut costs during downturns, postpone investment, and re enter expansionary strategies only after recovery becomes evident. From a Schumpeterian perspective, this reinforces the notion that cycles discipline firms collectively but reward entrepreneurs selectively.

4 From Historical Waves to the Sixth Schumpeterian Wave

Contemporary research (Robinson and Schwartz 2024) has extended Schumpeter's framework beyond historical analysis to examine whether emerging general purpose technologies are triggering a new long wave of economic development. Building on Kondratiev's long wave hypothesis and Schumpeter's theory of innovation clusters, scholars increasingly debate the exhaustion of the Fifth Wave—

driven by information and communication technologies (ICT)—and the possible emergence of a Sixth Technological Wave.

Several authors argue that the ICT paradigm has entered a mature phase characterized by diminishing productivity gains, financialization, and incremental rather than transformative innovation. In this context, Artificial Intelligence (AI) is widely discussed as a candidate general purpose technology capable of reshaping production functions, organizational structures, and sectoral dynamics.

Recent contributions suggest that AI differs from previous digital technologies by enabling not merely automation but cognitive augmentation and dynamic learning within production systems. This aligns closely with Schumpeter's original definition of innovation as a recombination of factors that alter the structure of production itself. However, scholars caution that the growth effects of AI may be uneven, mediated by institutional conditions such as income distribution, market concentration, and capital allocation.

5 Artificial Intelligence, Green Intelligence, and Carrier Paths

An important refinement of the Sixth Wave hypothesis is the concept of Green Intelligence, defined as the application of AI technologies to environmental and sustainability-oriented innovations (Biggi et al 2025). Empirical analyses of patent data show that AI driven green technologies display high levels of originality and technological generality, particularly in energy and transportation sectors.

These sectors are increasingly interpreted as the carrier paths of a potential new Schumpeterian wave, analogous to railways, electricity, and automobiles in earlier periods. However, while technological indicators suggest strong innovation potential, market adoption and valuation remain uncertain, reflecting elevated risk return asymmetries typical of early wave phases.

This discrepancy between technological promises and market realization reinforces a core Schumpeterian insight: innovation waves do not unfold smoothly. Instead, early phases are marked by experimentation, speculative investment, and strategic ambiguity, followed by consolidation and diffusion only after a new trajectory becomes dominant.

6 Financialization, Dual Cycles, and Strategic Implications

Recent theoretical work further refines Schumpeter's framework by distinguishing between a real innovation cycle and a financial super cycle. In this interpretation,

technological waves driven by AI and digital innovation coexist with a Minsky type financial cycle characterized by speculative leverage and asset inflation.

The interaction between these cycles helps explain why innovation led downturns sometimes escalate into systemic crises. Financial amplification can deepen recessions beyond what technological adjustment alone would require, transforming Schumpeterian “cleansing” phases into prolonged depressions.

For firm strategy, this dual cycle perspective implies that proactive innovation must be complemented by prudent financial positioning. Firms that innovate countercyclically but overextend financially risk being eliminated not by technological failure but by balance sheet fragility.

7 Final remarks

The literature converges on a clear conclusion: Schumpeterian business cycles shape firm strategy primarily through adaptive pressure rather than anticipatory coordination. While cycles restructure industries and open windows for radical innovation, most firms remain responsive followers constrained by existing technological trajectories. Proactive innovation — whether in the form of leapfrogging, countercyclical R&D, or early entry into emerging technological paradigms—remains the exception rather than the rule.

As shown, empirical research (Santaella 2000) fit squarely within this tradition, providing empirical grounding for the idea that strategic behavior is path dependent and cycle conditioned. Recent debates on AI and Green Intelligence suggest that a new wave may be forming, and again it is to be expected that firms will adapt mainly responsively to the structural changes it will cause.

Nevertheless, Schumpeterian logic cautions against technological determinism: waves are shaped as much by institutional and industry structures as by invention itself. Thus, despite the human perception of such “winds of change”, the possible drivers for new paradigm shift are indeed uncertain.

References

Schumpeter, J.A. 1939. *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. New York: McGraw Hill.

Vassolo, R., and Forstner, F.F. 2025. “Business Cycles and Their Implications for Strategic Management.” *Revista de Administração de Empresas* 65 (4).

Dosi, G. 1982. Technological Paradigms and Technological Trajectories: A Suggested Interpretation of the Determinants and Directions of Technical Change. *Research Policy* 11, n.3: 147–162. doi.org.

Santaella, C.R.K. 2000. Trajetórias Tecnológicas e Estratégias Empresariais na Indústria Brasileira de Autopeças. Master Dissertation.
<http://hdl.handle.net/10183/142605>

Robinson, Y., and Schwartz, H.M. 2024. "Will AI Generate a New Schumpeterian Growth Wave?" *American Affairs* 8 (4).

Biggi, G., Iori, M, Mazzei, J. and Mina, A. 2025. "Green Intelligence: The AI Content of Green Technologies." *Eurasian Business Review* 15: 803–840.

Kondratieff, N.D. "The Long Waves in Economic Life." *The Review of Economics and Statistics* 17, no. 6 (November 1935): 105–115. doi.org.

Minsky, H. P. "The Financial Instability Hypothesis." Working Paper No. 74, Levy Economics Institute of Bard College, 1992. <http://levyinstitute.org>