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Schumpeter's 'Pythagorean Moonshine': *Business Cycles* in the context of Schumpeter's Model of Economic Development

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Abstract

Joseph Schumpeter first articulated a Business Cycle model in his 1911 *Theory of Economic Development*. In 1932 he returned to the subject of Business Cycles, publishing, in 1939, a substantial two-volume work on the subject. It made little impact, with Paul Samuelson later dismissing it as 'Pythagorean moonshine' and Kenneth Galbraith labelling it a 'scholastic oddity.' To be greeted by such indifference after having spent seven years upon a book of which so much was expected was deeply disillusioning for Schumpeter, contributing to the sense of despondency that affected him in the early 1940s. This article surveys Schumpeter's model of economic development and early Business Cycle theory, before tracing the missteps which caused his *Business Cycles* to lose its way and fall (in Hume's phrase) 'dead from the press'. The inadequacies of his book are located in methodological issues and his uncritical embrace of the alternative Business Cycle models of Kitchin, Juglar, and Kondtatieff, the ultimate problem being the fact that Schumpeter's purported Business Cycle model wasn't a Business Cycle model at all – it was a vision of capitalist development.

Joseph Schumpeter (1883-1950) regarded cycles of business activity as integral to the capitalist development process. Capitalism never had, and never could, develop in a smooth, continuous, manner. Its growth was *always* irregular; always jerky, with periods of surging growth succeeded by periods of slow or even negative growth. Capitalism was defined by ebbs and flows of economic activity and without these it wouldn't develop at all. 'The atmosphere of industrial revolutions – of "progress" – is the only one in which capitalism can survive … stabilized capitalism is a contradiction in terms.'[1] To abstract the irregular, fluctuating, pattern of capitalist development would

[1] J.A. Schumpeter, *Business Cycles: A Theoretical, and Statistical Analysis of the Capitalist Process* (McGraw-Hill, New York, 1939), Volume II., p. 1,033.

be to abstract development itself – leaving a stationary state. This jerky pattern of capitalist activity follows a pattern sufficiently regular to generate Business Cycles. A Business Cycle is a recurring pattern of economic growth, with phases of rapid growth and prosperity towards a peak (the boom), succeeded by periods of declining and possibly negative growth (a recession or depression), which is followed by recovery and then renewed growth and prosperity, only to break with a return to recession and so on.

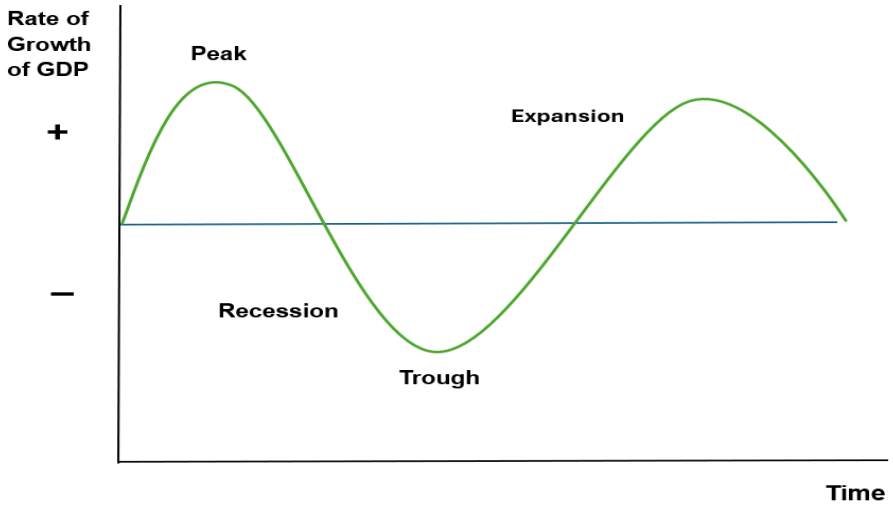


Figure 1. Conventional Form of the Business Cycle

For Schumpeter, this Business Cycle (the study of which intensified during the inter-war period) manifested a deeper phenomenon: namely, the uneven growth process of capitalism itself. To explain Business Cycles one must first understand the mechanism of evolution under capitalism, since the Business Cycle is the visible symptom of this underlying development process. This is why the sub-title of Schumpeter's 1939 *Business Cycles* is: *A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. To understand the capitalist growth process *was* to understand the Business Cycle. As a corollary, it followed that the only way to diminish or eliminate the Business Cycle was to eliminate the capitalist growth process as such – in effect, to end capitalism. Schumpeter was, for this reason, dismissive of emerging Keynesian talk of intervening to smooth or even end the Business Cycle. Not only was this impossible, but if it *were* achieved it would neutralise the dynamic power of capitalism itself – which had been the most formidable engine of human advancement the world had seen. Hence, Schumpeter insisted that he had no intention of making policy prescriptions. He wanted to celebrate the roller-coaster ride of capitalist progress, not bury it.

Schumpeter's Model of Economic Development

In 1909 a 26-year-old Schumpeter arrived to teach at the University of Czernowitz, which was then at the far eastern edge of the Austro-Hungarian Empire and is now the city of Chernivtsi in Ukraine. The previous year he had published *The Nature and Content of Theoretical Economics* which, although making little impact, qualified him to lecture at an Austrian university. He immediately set to work on his next book, *The Theory of Economic Development*, which appeared in 1911. This book established Schumpeter's reputation and its ideas remained the basis for his economic thought for the rest of his life.

Schumpeter, who always had a great admiration for Leon Walras's model of general equilibrium, accepted that an economy had a tendency equilibrium, with all markets clearing. The circular flow of income between firms and households would be stable and profits zero. Growth was likely to occur within such a system, but it would be gradual and piece-meal, operating along established technological and organisational parameters, being a matter of more labour or capital applied to established production functions. In this world there is growth but not development, in the sense of a transformation in methods of production over time. In his *Theory of Economic Development*, Schumpeter defined 'development' in the following terms:

> Development in our sense is a distinct phenomenon, entirely foreign to what may be observed in the circular flow or in the tendency towards equilibrium. It is spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing.[1]

Development, then, is not the elaboration of existing methods, products, technologies, and ways of doing things, but rather the disruption of existing practices and the initiation of new ones. It involves 'doing things differently'.[2] 'Development in our sense', Schumpeter continues, 'is then defined by the carrying out of new combinations ... in employing existing resources in a different way, in doing new things with them …'[3]

From whence does *development* (or evolution), as opposed to growth, derive? Schumpeter answered: through *innovation*. Innovation is the making of new combinations in methods of production and distribution, and it is this which converts a steady-state economy growing along conventional lines into a capitalist economy with significant increases in output due to radical changes in technology and business organisation. Innovation, he declares, 'is the outstanding fact in the economic history of capitalist society … The changes in the economic process brought about by innovation, together with their effects, and the response to them by the economic

[1] J. Schumpeter, *The Theory of Economic Development: An Inquiry into Profits, Capital, Interest, and the Business Cycle* (Harvard University Press, Cambridge, 1934), p. 64.
[2] Schumpeter, *Business Cycles*, Vol. I., p. 84
[3] Schumpeter, *Economic Development*, p. 66, 68.

system, we shall designate by the term Economic Evolution.'[1] Innovation is best understood as a significant change in production functions within an economy.[2] A production function maps economic inputs to outputs in the following manner:

$Q = f(K, L)$

Where Q (output) is a function of inputs of capital (K) and labour (L). The nature of the relationship between factor inputs and output is determined by technology: as technical and organisation efficiency improves, a given quantity of inputs of capital and labour will yield a higher level of output. In terms of a Cobb-Douglas production function:

$Q = AL^{\alpha}K^{1-\alpha}$

variations in labour inputs (L), whilst holding capital inputs (K) constant, cause movements *along* the total product curve; but a change in A, reflecting total factor productivity (and technology especially), causes a *shift* in the total product curve, indicative of an alteration in the entire relationship between factor inputs and output:

$Q^{1} = A^{1}L^{\alpha}K^{1-\alpha}$

Graphically, we have the following:

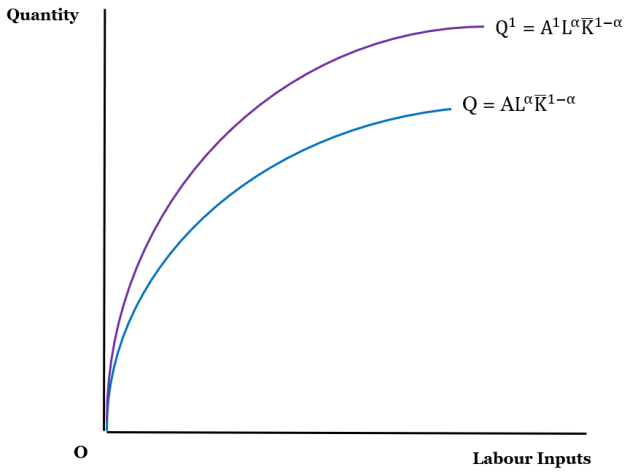


Figure 2. Production Functions showing effect of changes in Productivity

The production schedule $Q = AL^{\alpha}\overline{K}^{1-\alpha}$ shows how output Q changes as more labour is applied with a fixed quantity of capital ($\overline{K}$) and a given technology A. This is what Schumpeter means by growth. Technological progress is reflected in a change in the value of A to A^{1}, the effect of which is to shift up the production schedule, increasing total output for given inputs of capital and labour. It is such shifts in the production

[1] Schumpeter, *Business Cycles*, Vol. I., p. 86.
[2] *Ibid*., p. 87.

function that Schumpeter designated by the term innovation and it is these which yield development or evolution.

Innovation is something endogenous to the capitalist system and occurs because it promises the initiating individual or firm access to new and large sources of profit. The initiating of innovations Schumpeter calls *entrepreneurship*. The function of entrepreneurs, he writes, 'is to reform or revolutionize the pattern of production …'[1] Entrepreneurial individuals or firms gain an advantage over non-innovating firms and can realise, in the short-run, Super Normal Profits. In his *Theory of Economic Development* Schumpeter listed five leading spheres of innovation which he repeated in his *Business Cycles*:

1. *The introduction of new types of good*, which consumers are unfamiliar with but for which a demand can be created – for example, by advertising. Examples: the typewriter, electric light, motor car, the smart phone, and so on.
2. *The introduction of new methods of production* – which fundamentally shift production functions. Examples might be the introduction of the factory system for producing cotton goods, the replacement of steam engines by electric motors, or the utilisation of AI for doing accounts.
3. *The opening up of a new market* – which could mean a new geographical region (the Americas in the 1500s, Japan in the late nineteenth century, China in the late twentieth century) or new sources of demand within a country – say the development of clothes targeted at teenagers or luxury items for pets.
4. *The conquest of new sources for raw materials* – the introduction of the rubber plant into Malaysia, the opening-up of the North Sea oil and gas fields, fracking in the US.
5. *Carrying out a new form of business organisation* – for example, the development of limited liability joint stock companies in nineteenth century Britain, multi-national corporations, the development of investment banks.[2]

Such innovations create *new* ways to combine resources, lower costs, and expand markets. Exploiting these opportunities promises to bring rapid growth, high profits, increased investment, and raised productivity. As a result, capitalism goes through a surge of development: capital investment increases, GDP growth accelerates, per capita output rises, productivity goes up. There is a step-change in economic prosperity – a discontinuity in the capitalist growth path. The new methods tend to be introduced, first, into one or two 'leading sectors' of the economy – a classic example being the introduction of steam engines in late eighteenth-century Britain into the cotton-spinning and coal industries. The new methods then begin to diffuse through

[1] J.A. Schumpeter, *Capitalism, Socialism, and Democracy* (George Allen and Unwin, London, Second Edition, 1947), p. 132.
[2] Schumpeter, *Theory of Economic Development*, p. 66.

the economy as existing and new firms imitate their use – as, in the UK, steam power was gradually introduced into cotton weaving, woollen textiles, tin mining, agriculture, and so on. Growth and prosperity spreads, but slowly the impetus wanes and the innovation growth-surge ends. Yet the gains are not lost: the economy is now operating on a new production function, with higher levels of output from given factor inputs. Living standards have generally improved.

This, for Schumpeter, is the story of how capitalism grows, and it is *only* by this innovatory method that real development happens. 'Economic development in the sense of Schumpeter', writes Hagemann, 'is endogenous, spontaneous and discontinuous.'[1] Technological progress 'was of the very essence of capitalist enterprise'.[2] Hence his conviction that capitalist development is jerky and uneven, characterised by an "irregular regularity" of fluctuations, with periods of rapid development succeeded by phases of slower growth along conventional lines until a new wave of innovation begins to jolt the economy onto a higher growth path. His aim was not merely to trace such fluctuations but to locate their causes – this was the 'Fundamental Question.'[3]

The Mechanism of Development

Let us elaborate upon the process of development as envisaged by Schumpeter.

First, there is a continual accumulation of new production possibilities: science, research, experimental investigation, and problem solving generate new technological capabilities in terms of methods of production and types of products. 'New possibilities are continuously being offered by the surrounding world, in particular new discoveries are continuously being added to the store of knowledge.'[4] These were the fruits of *invention*. There might also be the opening-up of new markets, or the discovery of new raw material reserves. By these means the *possibilities* for growth accumulate – but this is not growth itself. A new technology may exist as a potentiality for many years before it is applied in production. Electric cars, for example, have been known since the early twentieth century, yet it was only a century later that the technology became the basis for a major industry. The making of an invention, and 'the carrying out of the corresponding invention are,' he writes, 'economically and sociologically, two entirely different things.'[5]

[1] H. Hagemann, 'Schumpeter's Early Contributions on Crises Theory and Business-Cycle Theory', *History of Economic Ideas*, Vol. 11, No. 1 (2003), p. 55.
[2] Schumpeter, *Business Cycles*, Vol. I., p. 10.
[3] *Ibid*., p. 34.
[4] Schumpeter, *Theory of Economic Development*, p. 79.
[5] Schumpeter, *Business Cycles*, Vol I., p. 85.

Second, what makes *innovation happen* is the initiative of *entrepreneurs.*[1] 'The carrying out of new combinations', says Schumpeter, 'we call "enterprise"; the individuals whose function it is to carry them out we call "entrepreneurs"'.[2] Entrepreneurs are people who see innovation as a means to high returns – what Schumpeter calls 'Entrepreneurs' Profit', which is 'the premium put upon successful innovation in capitalist society and is temporary in nature'.[3] Entrepreneurship is a particular and scarce skill. Most businesspeople are not, by inclination, entrepreneurs. The majority are content to operate along tried and tested lines, following custom, and producing within established production functions. They operate according to the parameters of established technology and business organisation, making familiar products by conventional methods. Such people are *managers* rather than *entrepreneurs* and this attitude is commonplace. Initiating real change is stressful, risky, and requires qualities of leadership – to formulate a vision, mobilise resources, challenge convention, and drive through change against resistance from vested interests. 'Carrying out a new plan', remarks Schumpeter, 'and acting according to a customary one are things as different as making a road and walking along it.'[4]

> Elaboration of an established plant, the introduction of new production methods, the opening up of new markets – indeed, the successful carrying through of new business combinations in general – all these imply risk, trial and error, the overcoming of resistance, factors lacking in the treadmill of routine.[5]

It is, Schumpeter writes, 'a distinct and painful process.'[6] People able and prepared to do these things are exceptional and hence small in number. 'To act with confidence beyond the range of familiar beacons and to overcome that resistance requires aptitudes that are present in only a small fraction of the population …'[7] This is why development is *not* continuous: once a generation of entrepreneurial talent has engaged in deploying some set of transformative technologies or business practices (developing the use of steam power, initiating the mass production of automobiles, establishing computer AI) then there will be a developmental hiatus until a new generation of entrepreneurial leaders can re-constitute to pioneer a new wave of technology. These entrepreneurs, because they *disrupt* existing systems and challenge the *status quo*, tend to be 'new men' – people rising up from outside established elites, setting up *new* companies, creating *new* fortunes and new family dynasties: men such as Henry Ford, who grew up on a farm in Michigan; Andrew Carnegie, who was born in a weaver's cottage in Dunfermline, Scotland; Richard

[1] Schumpeter introduced the term 'entrepreneur' in the 1934 English translation of this *Theory of Economic Development*. In the earlier German edition he used the term 'undertaker'.
[2] Schumpeter, *Theory of Economic Development*, p. 74.
[3] Schumpeter, *Business Cycles*, Vol. I., p. 105. This corresponds to what we now call Super Normal Profit.
[4] Schumpeter, *Theory of Economic Development*, p. 85.
[5] J.A. Schumpeter, 'Social Classes in an Ethnically Homogenous Environment', in J.A. Schumpeter, *Imperialism and Social Classes* (Basil Blackwell, Oxford, 1951), p. 158.
[6] *Business Cycles*, Vol. I., p. 98.
[7] Schumpeter, *Capitalism, Socialism, and Democracy*, p. 132.

Arkwright, a tailor's son who never attended school; and Bill Gates, whose father was a lawyer.

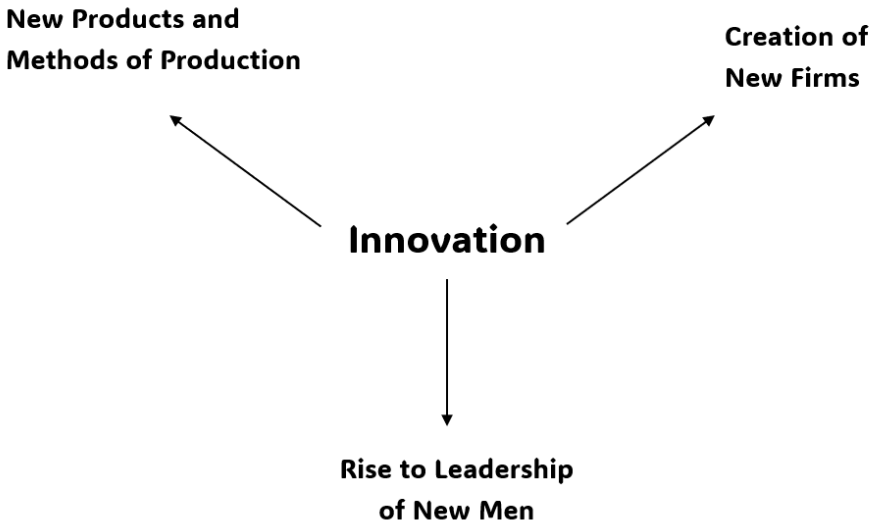


Figure 3. Characteristics of Innovation

Third, entrepreneurs do not generally provide the *resources* for innovation. What the entrepreneur supplies is the vision, drive, determination, energy, and leadership. They have the capacity to recognise and seize a profitable opportunity, but rarely do they have the funds to finance it. 'It is leadership rather than ownership that matters.'[1] They *might* have the funds, yet typically do not – for wealthy people tend to be comfortably situated within the very world the entrepreneur strives to overturn. An entrepreneur is *not* a capitalist (a distinction Marx failed to draw). From where, then, do they acquire the funds to invest? According to Schumpeter, they do so by *borrowing from capitalists and from banks*. It is wealthy investors and banks that provide the resources for investment, and they who assume the risk if the enterprise fails – for then their loans will be lost. Schumpeter was always emphatic that 'the entrepreneur is never the risk bearer', for he invests other people's money. 'Risk-taking is in no case an element of the entrepreneurial function. Even though he may risk his reputation, the direct economic responsibility of failure never falls on him.'[2]

By lending to entrepreneurs, banks engage in *credit creation*, expanding the money supply beyond their cash deposits. Credit creation is '*the monetary complement of innovation*'.[3] This doesn't merely provide entrepreneurs with investment funds – it contributes to a general expansion of expenditure through the economy in the manner of a Keynesian multiplier. All firms – old and new – benefit

[1] Schumpeter, *Business Cycles*, Vol. I., p. 103
[2] Schumpeter, *Theory of Economic Development*, p. 137.
[3] Schumpeter, *Business Cycles*, Vol. I., p. 111.

from the increased money demand and prices rise. It is entrepreneurship *plus* bank credit that makes innovation possible.

Fourth, economic development does not occur evenly across the capitalist system. It tends, at first, to be concentrated in certain *leading sectors* where the new ideas, technologies, or products are concentrated. Thus, in the Industrial Revolution, steam power was initially concentrated in the coal mining and cotton-spinning industries, only later being deployed in other manufacturing concerns and then rail locomotives. In the early twentieth century the US car industry pioneered continuous flow production lines, while in recent times computer chips were first used in computers, then mobile phones, then watches and household appliances. It is in these leading sectors that production functions are first transformed by pioneering entrepreneurs.

Fifth, once entrepreneurial leaders have successfully applied new methods and technologies to make large profits, other firms imitate them. The aptitude for *imitation* far exceeds that for *innovation* and the new techniques begin to be applied in a wide array of businesses and industries. In this way innovations become diffused and constitute the new standard, raising productivity throughout the economy.

> Hence the first leaders are effective beyond their immediate sphere of action and so the group of entrepreneurs increases still further and the economic system is drawn more rapidly and more completely than would otherwise be the case into the process of technological and commercial reorganisation which constitutes the meaning of periods of boom.[1]

A new *status quo* establishes itself – but at a higher level of output than the previous one.

Sixth, as the new methods of production are extended and consolidated, so are old methods rendered obsolete. Firms who fail to adjust to the new technologies fail. This is the leading cause of death among firms under capitalism: it is 'their inability to keep up the pace in innovating which they themselves had been instrumental in setting in the time of their vigor. No firm which is merely run on established lines, however conscientious the management of its routine business may be, remains in capitalist society a source of profit …'[2] This is the famous process of 'Creative Destruction', which, he says in *Capitalism, Socialism, and Democracy*, 'is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in.'[3] Creative innovators consign the old products and ways of doing things to the scrap heap along with the companies that specialised in them: the steam engine destroyed the handloom; the steam locomotive rendered canals redundant; the electric generator made the steam engine obsolete; the car replaced the horse-drawn carriage; the computer silenced the typewriter; and now the mobile phone has

[1] Schumpeter, *Theory of Economic Development*, p. 229.
[2] Schumpeter, *Business Cycles*, Vol. I., p. 95.
[3] Schumpeter, *Capitalism, Socialism, and Democracy*, p. 83.

replaced the once ubiquitous land-line. And in each case the dominant old firms are hardly ever at the forefront of the new: the pioneering rail firms were not the canal companies; Remington typewriters didn't produce the laptop; Apple didn't previously make land-line telephones; record companies did not found Spotify, and so on. New firms, new methods, new technologies perpetually rise over the rubble of the old in the churning 'creative destruction' of capitalist growth.

Seventh, as the wave of innovation ebbs the capitalist development process slackens and steady growth on established lines re-asserts itself. The new entrepreneurs who borrowed to found their businesses are now prospering and can afford to pay back their loans and money supply contracts. Established firms have either adapted to the new ways of doing business or gone bankrupt. As output increases due to the roll-out of new methods, prices and profit margins fall. Entrepreneurial profits decline and ultimately vanish. The economy *tends towards* equilibrium (even if it never finally arrives at it) and growth is now along established lines with given production functions. Capitalism enters a phase of modest, quiet, growth.

Eighth, for Schumpeter this is far from the end of the process. While the Classical economists speculated upon the arrival of the stationary state, for Schumpeter this was merely a temporary hiatus. For all the while new technologies will be accumulating, new scientific ideas emerging, new ways of organising production being tested, and at the same time a new generation of entrepreneurs will form who, like their predecessors, are ready and willing to grasp the potential of the new techniques to initiate a fresh wave of innovation and borrow from banks only too keen to find profitable outlets for their accumulated funds. Thus begins a new surge in capitalist development as production functions are transformed, growth accelerates, new men make fortunes, and old companies adapt or die.

As can be seen, capitalism as a system is inherently characterised by qualitatively and quantitively distinct phases of development. While the economy may seem to tend towards an equilibrium state, this is never arrived at: no sooner is it approached than a new wave of innovating entrepreneurs will overturn customary practices and launch the economy on a new development path. Capitalist evolution, Schumpeter writes, 'is lopsided, discontinuous, disharmonious by nature', this disharmony being 'inherent in the very *modus operandi* of the factors of progress … the history of capitalism is studded with violent bursts and catastrophes …'[1] Driving this recurring pattern are three things:

1. The accumulation of developmental opportunities – the emergence of new markets, new scientific possibilities, new ways of organising production and distribution. Innovation becomes steadily more possible.

[1] Schumpeter, *Business Cycles*, Vol. I., p. 102.

2. The emergence of an innovating entrepreneurial class of new men, willing to disrupt existing methods of business and seize profitable opportunities by shifting the parameters of the system. It is these entrepreneurs that render capitalism dynamic, unstable, innovatory, and progressive.
3. The banking system which extends the funds necessary for putting the new production possibilities into practice, supplying the funds for capital investment, hiring labour, and bridging the gap until an idea becomes a reality.

In short:

Capitalist Development = Innovation + Entrepreneurship + Bank Credit

Together, this trinity makes development possible; abstract any one and capitalist development will cease, leaving only simple organic growth at best.

Business Cycles

Schumpeter's theory of economic development also yielded a theory of the Business Cycle, and a chapter was devoted to the topic in his *Theory of Economic Development*. It is easy to see why. Having shown that capitalist development is intrinsically episodic, with successive phases of fast and slow growth reflecting fluctuations in the intensity of innovation, it was necessary only for Schumpeter to show that these phases occur in a predictable periodic rhythm for him to generate a model which could explain the ups and downs of the Business Cycle.

The existence of a regular Business Cycle had been identified by economists since the nineteenth century. Several attempts had been made to identify and explain the recurring ebb and flow of economic activity. In the 1862, Clement Juglar had postulated the existence of an 7-11 year cycle linked to investment in fixed capital, with 4-5 years of strong growth followed by 4-5 years of weak or even negative growth. Karl Marx traced the duration of the cycle to the periodic renewal of machinery in the UK cotton industry (he thought cotton machines had about a ten-year life), while W.S. Jevons found the origin in fluctuations in the heat intensity of the sun. In 1926 the Russian economist, Nikolai Kondratieff, argued, on the basis of price and output data, that the capitalist system went through recurring 'long waves' of around fifty years in length – however, at this point he was unable to explain why and he was soon arrested under Stalin's regime and executed in 1938.[1] Meanwhile, in 1923, Joseph Kitchin claimed to have found a cycle of three to four years in length. This short-term 'Kitchin cycle' is seen as linked to the tendency of firms to over-produce in periods of market scarcity and rising prices; output exceeds demand and stocks accumulate; hence firms

[1] N. Nondratieff, 'The Long Waves in Economic Life', *The Review of Economics and Statistics*, Vol. 17, No. 6 (November 1935), pp. 105-115.

scale back production to draw down inventories until stocks are low and the cycle repeats itself.

Schumpeter was a pioneer student of Business Cycles. He first used his theory of capitalist development to account for the Business Cycle in 1911 – before the work of Kitchin or Kondratieff – and returned to the subject repeatedly over the next quarter-century, most obviously in his 1939 work *Business Cycles*. Yet although the latter devoted over twenty-times as much space as the former to the phenomenon of cycles, the essential outlines of the model remained the same. Schumpeter's theory of Business Cycles was in place before the First World War and it is a curious weakness that, despite all the research on the subject that emerged between the wars, and despite the dramatic instability of capitalism over these years, he never elaborated or revised his youthful first offering, instead putting it to work on a larger and larger body of material.

Here we outline Schumpeter's complete model of the Business Cycle, which is based on the schema of the *Theory of Economic Development* as amended and extended in his *Business Cycles*.

Schumpeter's Four Stage Business Cycle Model

As Simon Kuznets observed, for Schumpeter 'Business Cycles are recurrent fluctuations in the rate at which innovations are introduced into the economy.'[1] These fluctuations are, in turn, a product of fluctuations in the intensity of entrepreneurial endeavour. Business Cycles are *endogenous* to the capitalist system – they are generated by the logic of the system. Yet they 'are not evenly distributed over time … they tend to cluster, to come about in bunches …'[2] The main factor causing this bunching is the limited supply of entrepreneurial talent.

Stage 1 – Expanding Innovation

Assume the economy is initially in equilibrium. Markets are cleared and unemployment is low, as are profits and interest rates. Since the economy is stable the risks associated with investment are modest or at least calculable. Innovation is, and has been, at a low level for some time, which means there will be a substantial stock of potential new methods, technologies, products, scientific ideas, and possible new markets to exploit. In this context, individuals with entrepreneurial drive and leadership capacity will grasp that there exist significant opportunities to introduce new ways of doing things, new ways to produce, new products to sell, new markets or raw

[1] S. Kuznets, 'Schumpeter's Business Cycles', *The American Economic Review*, Vol. 30, No. 2, June 1940, pp. 257-271, p. 257. Kuznets's critical review was the most perceptive and (ultimately) influential contemporary analysis of Schumpeter's *Business Cycles*.
[2] Schumpeter, *Business Cycles*, Vol. I., p. 100.

materials to exploit. Since the situation is propitious, there will be a 'swarm' of entrepreneurial talent entering the economy, the aim of which is to disrupt established ways of doing things and make large profits. These entrepreneurs tend to be 'new men', operating outside the established firms, and they will need to borrow funds, especially from banks, to fund their projects. 'Capitalism', says Schumpeter, 'is that form of private property economy in which innovations are carried out by means of borrowed money, which in general … implies credit creation.'[1] When banks create credit-lines for start-up firms they expand the total money supply. This credit money is initially in the hands of entrepreneurs who use it to invest in machinery and materials, hire labour, rent premises, and so forth. Since the economy is assumed to be close to full employment, these resources can only be obtained by new firms through bidding them away from existing firms. Hence, factor prices (including wages and the rate of interest) rise, and as this money is spent, consumer demand increases, pushing up prices in general. As Oscar Lange aptly summarises: 'The interplay of innovation and credit creation creates the business cycle.'[2] Existing firms thus experience rising costs *and* rising prices – so their overall position tends to remain satisfactory. At this point the emerging boom is reflected chiefly in rising prices: output increases little overall as the new firms are still being built and assembling resources, so their output is yet to reach the market. Indeed, output of consumer goods may fall as established firms lose resources to the new firms, which are investing in capital goods. In other words, during the emerging prosperity phase there will be a shift *within* total output from consumer to capital goods. At the time Schumpeter was writing, this squeezing of consumer goods output to permit greater capital goods production was commonly known as 'forced saving.' Another Austrian economist, Friedrich Hayek, similarly assumed that economic cycles developed out of economies in equilibrium when the rate of return on investment appeared higher than the money-rate of interest, leading to an expansion of the capital goods sector at the expense of the consumer goods sector.[3]

Stage Two – the Secondary Boom

It is in this phase that output begins to increase. One reason is that new firms exploiting new methods now begin to produce for the market. This output increases ever more rapidly as productive systems are established and further waves of businesspeople begin to imitate the pioneering entrepreneurs and follow their lead. The new technology, product, or form of business organisation begins to permeate the economy. Second, with rising wages and spending, total expenditure increases. This

[1] *Ibid*., p. 223.
[2] O. Lange, 'Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process by Joseph A. Schumpeter', *The Review of Economic Statistics*, Vol. 23, No. 4, November 1941, p. 190.
[3] C.f. F.A. Hayek, *Prices and Production* (George Routledge and Sons, London, Second Edition, 1935).

induces existing firms to expand their output. To pay for this expansion, borrowing and credit creation increase further, and households also borrow more, encouraged by rising wages. This is what Schumpeter calls the 'secondary boom', generated out of the primary innovation boom. It is this phase of the boom which captures media attention and leads to speculative excesses. Whereas borrowing was initially *productive*, undertaken to finance innovation, now it is increasingly *unproductive*, undertaken to fuel consumption or buy assets like land or stocks, whose prices will be rising.

Stage Three – The Boom Breaks – Recession

The primary cycle was driven by the initial surge in innovation. This innovation surge eventually breaks. Schumpeter suggests two reasons for this:

i. As the fruits of innovation reach the market, and other firms and businesspeople enter the innovating sectors in search of higher profits, output increases and prices and profits are driven down. The super-normal profits which spurred innovation in the first place begin to evaporate. As returns to innovation decline, so does the rate of innovatory investment.
ii. The disruptive effects of innovation cause business risk to increase. As new methods, technologies, and products enter the market, relative prices and costs fluctuate. Markets are in flux. While some prices rise, others fall; some products experience booming demand, others begin to become obsolete; relative costs shift. As the business environment becomes more risky, innovating firms hold back from further investment.
iii. One should probably add that the supply of truly entrepreneurial business leaders will be exhausted, with earlier pioneers now being engaged in running their established firms. Thus, the supply of new investment falters.

At the same time, two further developments tip the economy into recession:

First, the overall supply of goods increases. As we have noted, the entrepreneurial firms now begin to produce ever-greater quantities of output as the new production functions become consolidated. Prices start to fall. Existing firms, who invested more during the upswing, also begin to produce more, further driving down prices. There is an 'avalanche' of consumer goods in the market.[1]

Second, what Schumpeter calls 'auto-deflation' occurs. In the early phases of the upswing, entrepreneurs borrowed from banks to finance their speculative projects. These loans have (in many cases) been vindicated and the new firms make large profits. Their revenues increase, and they begin to pay back their loans. Bank credit starts to contract, lowering the money supply, and so do expenditure and prices. This

[1] Schumpeter, *Business Cycles*, Vol. II., p. 502

contraction in bank credit occurs naturally and hence Schumpeter calls it 'auto-deflation'. 'It occurs', he writes, 'without any initiative on the part of banks and would occur even if nobody ever went bankrupt or restricted operations, and if no bank ever called or refused a loan.'[1] The result is more restrictive monetary conditions and a tightening aggregate demand. In this way the money economy contributes to the downswing and for this reason is often considered the *cause* of the recession. But for Schumpeter, monetary contraction is a symptom of deflationary tendencies originating within the economy itself.

The combined result of these developments is a recession. It is in this phase of the cycle that real GDP increases fastest. Goods from new and old firms enter the market and prices decline. The fruits of innovation are harvested in the form of greater output and falling prices. But many do not see the recession in such positive terms, since it is now, also, that established firms are negatively affected by the wave of innovation. Whereas the new firms, with lower costs and strong market offerings, continue to make profits as competition intensifies, *established* firms come under pressure. Some move with the times and modernise, imitating the new methods and maintaining profitability. Others rationalise, cutting costs, and scaling back output. But for those who remain wedded to tradition and cannot make pace with the new productive combinations 'the emergence of the new methods means economic death'.[2] Firms fail, factories close, unemployment rises.

Stage Four – Depression

The primary cycle will always generate a recession as the innovation impulse subsides. However, the secondary cycle, whose effect is to exaggerate the primary cycle, may convert the recession into a more serious depression. The secondary cycle pushed the upswing into a powerful boom, with speculative investments, high levels of borrowing, asset price bubbles, fraudulent behaviour, and so forth. It is these excesses that turn the recession into a depression. Stock markets may crash; property prices fall; consumers renege on their debts; banks may fail. A vicious spiral develops, with falling demand and prices leading to further deflation, all of which hurts the older firms hardest. As Schumpeter explains it:

> As long as we took no account of it [the secondary wave], we had only two phases – Prosperity and Recession – in every unit of the cyclical process, but now we shall understand that under the pressure of the breakdown of the secondary wave and of the bearish anticipation which will be induced by it, our process will generally, although not necessarily, outrun (as a rule, also miss) the neighbourhood of equilibrium toward which it was heading and enter a new phase … which will be characterized by what we shall refer to as Abnormal Liquidation, that is to say, by a downward revision of

[1] *Ibid*., Vol. I., p. 136.
[2] *Ibid*., p. 134.

> values and a shrinkage of operations that reduce them, often quite erratically, below their equilibrium amounts.[1]

In consequence, the period of prosperity doesn't merely subside, leaving the economy back at its equilibrium position; rather, the economy tends to overshoot equilibrium, with economic activity contracting and significant unemployment of factors, including labour.

Stage Five – Recovery

Technically, Schumpeter's model has four phases, but it makes sense to separate out a fifth phase – which is the movement of the economy out of depression towards equilibrium. This is a conventional process of markets working to clear. Raw material prices and wages fall in the depression, cutting costs. As weaker firms fail, those remaining will be more resilient and have access to greater market share. Interest rates fall, lowering the cost of borrowing. For such reasons the trough of the depression passes and the economy moves back towards full employment equilibrium; yet it is an equilibrium at a higher level of productive capacity: with innovation and elevated production functions having permeated through the economy, output will be higher, costs and prices lower, and real wages higher. The cyclical process overlays an upward trend of material prosperity which improves the living standards of the mass of the population. Not that the economy will ever precisely arrive at equilibrium: for once the economy stabilises and investment becomes more predictable, and the cost of borrowing declines, then a new wave of entrepreneurs will be ready to exploit the always expanding pool of new scientific ideas, technologies, and production systems which have not been taken up during the economy's downward phase. By now the last generation of 'new men' will have consolidated themselves and become part of the business establishment, and times will be propitious for a fresh breed of disruptors to emerge, borrowing from banks, and initiating a new Business Cycle – and so the process recurs.

Figure 4 provides a conventional diagrammatic outline of the Schumpeterian Business Cycle.

[1] *Ibid*., p. 149.

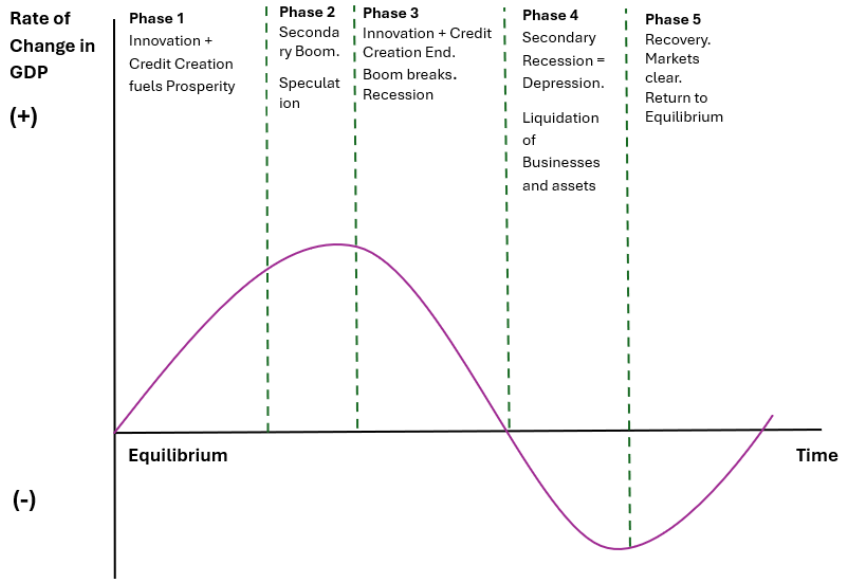


Figure 4. Conventional Depiction of a Schumpeterian Business Cycle

Numerous expositions of the Schumpeter cycle follow this pattern, with the upswing of the cycle driven by innovation associated with rising output, and the subsequent decline in innovation accompanied by falling growth rates – tending towards a contraction in the depression phase. Yet this diagram effectively ties Schumpeter's theory to a conventional Business Cycle trajectory of boom and slump and misrepresents the basic processes of his model. There are several ways in which the Business Cycle scenario outlined by Schumpeter diverges from that of usual Business Cycle narratives:

i. Schumpeter's model assumes full employment at the commencement of the innovation-growth phase. He believed that an economy, after reaching the trough of the depression, would recover towards equilibrium. One aspect of this was the clearing of unemployment. Thus, the Business Cycle commences with the labour market already tight. This means that there are stringent limits to growth in the upswing: there are few unemployed resources to fuel the growth process and the economy cannot grow in the Keynesian manner *towards* full employment. Overall GDP hardly rises in the prosperity phase. To quote Schumpeter: 'under our assumptions there could, in general, be no net increase in output …'[1]

ii. The upswing phase is driven by the emergence of new firms deploying new methods. These firms invest in innovatory technologies and establish new plant – which they pay for by borrowing from banks. Hence, the first phase of the cycle is characterised by the growing output of capital goods. The resources to make capital goods are drawn from established firms which tend

[1] *Ibid*., p. 132.

to make consumption goods. Thus, in the upswing of the cycle capital goods output is increasing but consumption goods output is constant or even falling. 'In its "pure" form,' writes Schumpeter, our model yields the expectation that in prosperities the output of producers' goods should at first increase at the expense of the output of consumers' goods. The latter should, even absolutely, decline …' Since the new industries have hardly begun to produce for the market, total GDP is barely increasing. It follows that the first two phases of the cycle cannot be observed from GDP figures alone.

iii. Since new firms are competing with established firms for resources, factor prices (including wages) and costs are rising. As Schumpeter writes, 'there being no unemployed resources to start with, prices of factors of production will rise, and so will money incomes and the rate of interest … Costs will rise against "old" firms as well as against entrepreneurs.'[1] Money supply is also rising, while overall output is increasing only slowly. The result is inflation. 'Price level should rise in prosperity – under the pressure of credit creation, which, under the conditions embodied in the pure model, would not be compensated either by an increase in output or by any fall in "velocity" …'[2] *The 'prosperity' phase is more one of rising prices than rising output* – though Schumpeter emphasises that rising prices are a symptom, not the cause, of the upswing.

iv. The recession phase corresponds with a fall in innovation and business investment. But it is in the recession that real GDP begins to significantly increase. This is because the output of the new industries and the enhanced production functions used in established businesses finally enters the economy. Further, while the demand for capital for innovation declines, the demand for capital goods by imitating firms and traditional firms seeking to update their methods will continue. Hence the peculiarity of the Schumpeter cycle: real GDP increases fastest during the recession – not the boom. 'A queer picture, indeed' remarked Lange. This is the opposite of conventional models. Thus it is that Schumpeter remarks that 'the picture of the working of our model presents features that seem to differ from widely accepted, though not unanimous, opinion. It does not give to prosperity and recession, relatively to each other, the welfare connotations which public opinion attaches to them. Commonly, prosperity is associated with social wellbeing, and recession with a falling standard of life. In our picture they are not, and there is even an implication to the contrary.'[3]

v. What falls during the recession is not output but prices. Greater volumes of production enter the market just as the money supply contracts as firms pay-

[1] *Ibid*., p. 131.
[2] *Ibid*., Vol. II., p. 462.
[3] *Ibid*. Vol. I., p. 142.

off their initial borrowing. This is the phase of autodeflation. Real living standards rise fastest during the recession.

vi. Total output only falls during the depression since it is now that existing firms that have failed to keep up with the new innovations fail, while others cut back production as demand for their products contracts. Speculative excesses also need lead to business and bank failures. Unemployment begins to emerge as a significant phenomenon at this point. Schumpeter saw this unemployment as primarily technological, a product of the phase of intense innovation, as workers in out-of-date firms or processes or with redundant skills finding themselves unemployed (handloom weavers, horse farriers and black smiths, typists and typewriter makers, video store workers, and such like). To this there may be added demand deficient unemployment in the depression. But all markets, including labour markets, will clear as the economy moves back towards equilibrium. For this reason, Schumpeter considers technological unemployment 'ephemeral.'[1]

Figure 5 presents a series of leading economic variables across the phases of the Business Cycle as envisaged by Schumpeter. It is a complex picture and (as we have noted) the cycle is not captured by aggregate output data. In terms of a conventional pattern of a rising series in the boom and a falling series in the recession, prices and the capital goods output are the best indicators of the cyclical process, since both rise in the innovation-led boom and both fall in the ensuing recession and depression.

[1] *Ibid*., Vol. II., p. 515.

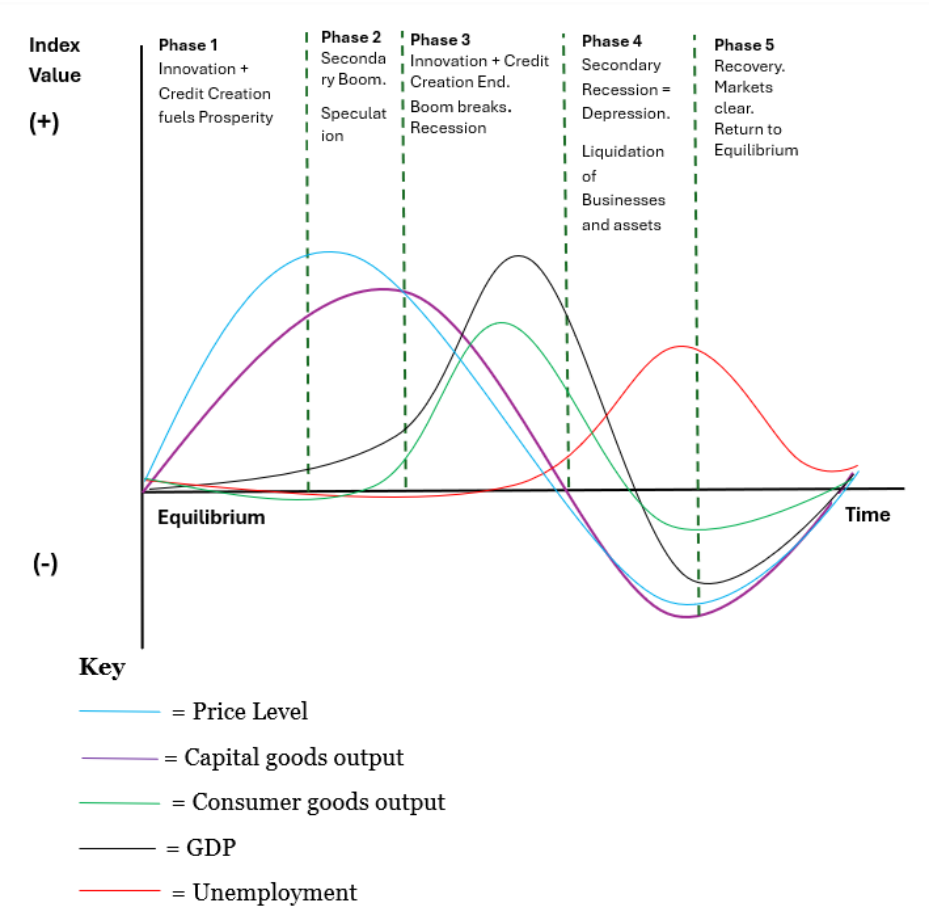
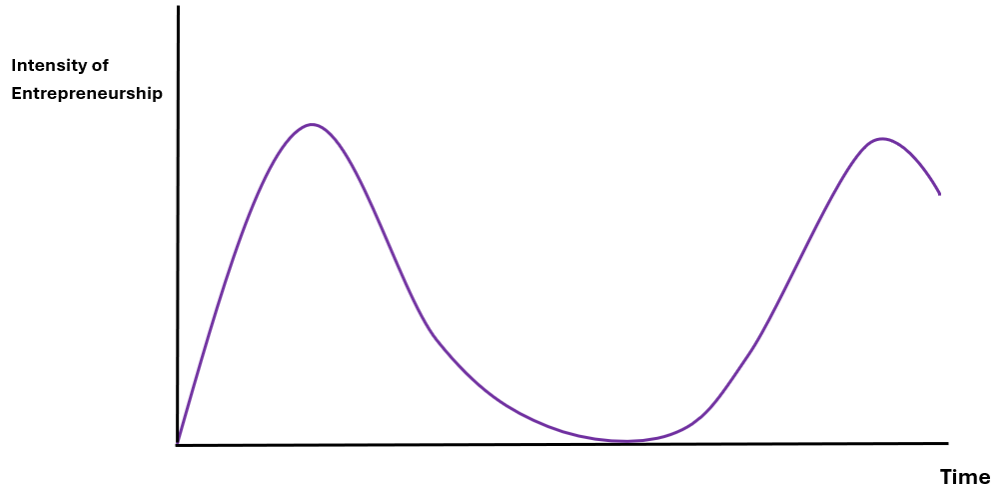


Figure 5. The Behaviour of Key Indicators over the Schumpeter Business Cycle

If one were to ask why, exactly, Business Cycles occur in Schumpeter's model, it revolves around what were, for Schumpeter, two basic facts about entrepreneurship:

1. *That the supply of people with the skills, qualities, and character to be genuine entrepreneurs is limited*. Within any generation, only a limited number of people have the drive, ambition, determination, and ability to seize hold of a *potential* innovation and implement it against general resistance in the quest for high future profits. This means that innovation hits a limit set by the number of potential innovators. Without this, innovation would be *continuous* since there exist, at any time, a multiplicity of potential technologies, scientific ideas, organisation reforms, new marketing opportunities etc. that could be implemented. Inventions are assumed to be accruing continually; it is *innovation* which is harder to do and subject to constraints. This is one reason why capitalist development is episodic and not continuous.
2. *That entrepreneurship occurs in waves*. The reason, says Schumpeter, why new productive combinations are not evenly distributed through time is that

they appear 'discontinuously in groups or swarms.'[1] If, he continues, entrepreneurs were to appear independently of one another there would be no booms or depressions: innovations would occur continuously and each would be so small as to be absorbed within the overall economy. Instead, they appear in clusters and this is what causes surges of innovation. Why is there this clustering effect? First, entrepreneurial innovation is most likely to occur when the economy is relatively stable so that future profitable prospects can be best estimated. In other words, innovation tends to happen in periods of stability *between* booms and slumps. Banking funds will be more plentiful then and interest rates low, with banks keen to commence lending after recovery from a depression. Hence, credit for investment will be easier to access. Second, once one entrepreneur has launched an innovation others will quickly follow. The pioneer will have overcome the most obstacles and difficulties, but their example will induce others to follow their lead. The number of truly leading entrepreneurs is small; a larger number will be able to *follow* their example and exploit emerging opportunities. 'Hence the first leaders are effective beyond their immediate sphere of action and so the group of entrepreneurs increases still further and the economic system is drawn more rapidly and more completely than would otherwise be the case into the process of technological and commercial reorganisation which constitutes the meaning of periods of boom.'[2] But, given the inherent limits on the number of innovating entrepreneurs, the swarm of entrepreneurs soon exhausts itself and the innovating impulse subsides until the conditions for a new wave have re-constituted themselves. It is, Schumpeter concludes, because entrepreneurs appear in swarms that economic development exhibits its uneven, jerky, pattern.



[1] Schumpeter, *Theory of Economic Development*, p. 223.
[2] *Ibid*., p. 229.

Figure 6. Fluctuations in Entrepreneurial Intensity over Time

Figure 6 illustrates the flow and ebb of entrepreneurial activity which accounts for the comparable wave-like pattern of innovation and hence the periodic Business Cycle. For as Schumpeter writes, it is 'entrepreneurial activity that propels the system away from any pre-existing neighbourhood of equilibrium.'[1] It will be noted that the rise and fall of innovative activity corresponds with the rise and fall of prices and capital-goods output. Thus, we can consider changes in the price level and index of capital-goods output to be the best indicators of the fluctuations in entrepreneurial activity driving the Business Cycle.

Given that the Business Cycle is, for Schumpeter, an *entrepreneurial* cycle, his model requires that entrepreneurship occur in waves. In both the *Theory of Economic Development* and *Business Cycles* this is something he asserts rather than proves. The idea that the supply of entrepreneurial talent is limited and quite quickly exhausts itself during any innovatory phase seems unlikely. One would imagine that the willingness and ability to take risks to pursue Super Normal Profits is widely distributed across society and the notion that only a special elite of people with such talent exists at any one time smacks, rather, of the 'great man' theory of history and a Nietzschean romanticisation of the growth process. How one could know that the supply of entrepreneurial genius had been exhausted is hard to discern, leaving a major unquantifiable assumption at the heart of Schumpeter's system. It has been said that 'great generals are not made in times of peace' – which suggests that it is not so much the quality of entrepreneurship that fluctuates over time but the scope of innovatory opportunities. If so, it is the fluctuations in opportunity which need to be explained, which tends to either push us back to explaining why business conditions follow a cyclical pattern (which is circular reasoning), or to the need for a cyclical theory of invention, which Schumpeter seems to reject and for which he has no theory. As G. Tichy justly observes, 'Schumpeter's remarks on innovation were too poor a basis for the gigantic structure of theory built on it.'[2]

Business Cycles

Schumpeter's Business Cycle model was contained in Chapter Six of his *Theory of Economic Development*, an English translation of which appeared in 1934. However, in the early 1930s, Schumpeter returned to his Business Cycle model and elaborated it on a far greater scale, converting a chapter of 50 pages into a two-volume epic of over 1,000 pages. His aim, it seems, was to contribute to the burgeoning literature on Business Cycles in the wake of the 1929 Wall Street Crash and the ensuing American and world depression. The moment was surely propitious for him to consolidate his

[1] Schumpeter, *Business Cycles*, Vol. II., p. 552.
[2] Quoted in Hagemann, 'Schumpeter's Early Contributions', p. 63.

status as a leading authority on the Business Cycle. Making this especially important was the fact that Schumpeter had not produced a major book since his pioneering 1911 *Economic Development*. From 1927 he had been spending increasing amounts of time at Harvard University and had been head-hunted to the Economics Department there in 1932. Considered by Harvard (and himself!) to be one of the world's leading economists, Schumpeter felt under pressure to produce a great work to justify his reputation. He had been working for some years on a book on money, but this had fallen by the wayside. So, in 1932 he returned to the subject of Business Cycles and for the next seven years devoted whatever spare time he had to the project, often working late into the night. 'I am still a slave to my manuscript', he wrote in 1937, 'and for instance worried last night till 2 a.m. on such questions as whether potatoes were important enough in Germany in 1790 to count in the business cycle.' The following year he reported that 'I am half dead and certainly entirely dazed from the long hours I must spend on rereading and touching up my manuscript.'[1]

Unfortunately, when the great work finally appeared in 1939 it was apparent that diminishing or even negative returns had long since set in. His Business Cycle model proved unable to sustain the vast weight of scholarship Schumpeter heaped upon it: what had, in 1911, been a sleek and dazzling essay on the dynamics of capitalism, had become a baroque palace, so adorned, convoluted, elaborated, and labyrinthine as to submerge whatever core of useful theory it contained. It was a heroic failure.

What went wrong? The problem was that Schumpeter had, in 1911, sketched a fertile theory of the Business Cycle. But it was painted in broad brush strokes and not supported by either detailed theory or concrete evidence. The obvious next step was either to write a single book on his theory of the Business Cycle, or to produce an empirical study supporting his entrepreneurial-innovation interpretation of capitalist growth through creative destruction. From the bent of his mind, and his growing interest in economic history, the latter seemed the natural course. How to do it? Again, two courses suggested themselves. By the 1930s the emerging field of Business Cycle studies was increasingly statistical, seeking to isolate, measure, and account for fluctuations in variables seen as key to what Schumpeter called the periodic 'pulse' of economic life. Kuznets was a leader in this kind of approach. However, Schumpeter was not a statistician, and, in any case, his theory was hard to model and test through numerical data. Innovation, after all, is very difficult to measure. His approach was more qualitative than quantitative, and Schumpeter sensed – rightly – that he could not vindicate it through what we might now call econometric methods.[2] An alternative

[1] T.K. McCraw, *Prophet of Innovation: Joseph Schumpeter and Creative Destruction* (The Belknap Press, Cambridge, Massachusetts, 2007), p. 252.

[2] There is some irony in this as Schumpeter was a founder and past president of the Econometric Society. He certainly endorsed the programme of formulating and testing empirical economic propositions: he just wasn't intellectually trained to carry out this operation.

course suggested itself: namely, to turn to economic history to explain *past* Business Cycles in terms of his theory. This Schumpeter was well equipped to do, and his own interest in economic history was developing rapidly during this period. As he wrote after finishing his *Business Cycles*:

> I have been primarily a theorist almost all my life and feel quite uncomfortable in having to preach the historian's faith. Yet I have arrived at the conclusion that theoretical equipment, if uncomplemented by a thorough grounding in the history of the economic process, is worse than no theory at all.[1]

Indeed, near the end of his life he went further:

> I wish to state right now that if, starting my work in economics afresh, I were told that I could study only one out of [theory, statistics, and history] but could have my choice, it would be economic history that I should choose.[2]

Such a study would have involved tracing a series of distinct cycles and showing how they were initiated by entrepreneurs applying innovations to certain leading sectors, out of which a boom then developed to be followed by a recession. The result would have been a worthwhile and enduring contribution to the literature of Business Cycles and economic history. To some degree Schumpeter does do this. He certainly traces the history of several crucially important innovations since the late 1700s and their impact on three leading economies: the United States, United Kingdom, and Germany. Thus he explores the effects of the development of mechanised steam technology in the British cotton industry during the Industrial Revolution – seeing, in these years, 'a bulge in all observable symptoms of business activity obviously associated with industrial change of the innovation type'; he devotes many pages to 'the Railway Age' of the mid-nineteenth century, where the railway emerges as the exemplary Schumpeterian innovation, both destroying existing businesses (toll-roads, stage coaches, canals, firms catering for local markets) and creating whole new production functions in transport, raw material distribution, retailing, urban expansion and so forth; he describes the effects of the emerging electrical industry in the late nineteenth century; and then, of course, the mass-production car industry which wreaked creative destruction on the railroads and opened up the age of the automobile. These waves of innovation are well described. But the treatment is too impressionistic and narrative in structure. Schumpeter provides a suggestive reading of economic history over 200 years in three countries; but for this exercise to validate the claims he seeks to make, far more careful detail would be required – detail that was often lacking in the 1930s (when economic, and especially business history were still in their infancy) and would have required a much close focus upon one or two Business Cycles in maybe one economy (one thinks of R.C.O Matthew's *A Study in Trade-Cycle History: Economic Fluctuations in Great Britain 1833-42*). Trying to sketch two centuries of Business

[1] Quoted in McCraw, *Prophet of Innovation*, p. 254.
[2] *Ibid*., p. 249.

Cycles in three economies was too big an undertaking and too much detail was sacrificed in creating what could only be a loose and impressionistic picture.

Indeed, in the process something odd happened. Submerged among volumes of economic and business facts, Schumpeter lost control of his material. He began to write a kind of stream-of-consciousness economic history with observation following fact following digression following summary following reference to a graph and so on. Kuznets said it read like an 'intellectual diary, a record of Professor Schumpeter's journey through the realm of business cycles and capitalist evolution, a journal of his encounters there with numerous hypotheses, diverse historical facts, and statistical experiments.'[1] As McCraw observes, Schumpeter had no editor, no one to check his work or cut down his excesses, and instead 'plunged ahead, putting far too many words to paper and publishing reams of untested ideas and unedited copy.'[2]

Yet this was not the chief problem with the book. Schumpeter's real misstep was to fall under the spell of three Business Cycle advocates: Messrs Juglar, Kitchin, and Kondratieff. This is the most curious aspect of the book and fundamentally vitiated whatever merits it possessed. The root of the matter was the question of the periodicity of cycles according to Schumpeter's analysis. What Schumpeter provided was an insight into the capitalist growth process, according to which growth was seen as uneven, arising out of the surge and ebb of fundamental innovations that re-defined production functions. This was a perceptive insight and created a new way of understanding the capitalist growth process. Although it was not, in itself, a model of the Business Cycle, Schumpeter sketched a narrative of how it might be – as we have seen. But there were two troubling issues here.

First, Schumpeter's Business Cycle has no clear link (as we have discussed) with how a Business Cycle is commonly regarded. Conventionally, a Business Cycle has an expansionary-boom phase, characterised by falling unemployment, rising prices, and growing output. This is then succeeded by a recession, with rising unemployment, falling prices, and falling output. Yet in Schumpeter's model the economy starts at full employment so there is little scope for increased output in the boom. The boom is a boom in prices and fixed capital formation not GDP. The growth rate does not accelerate significantly. Output only properly increases in the recession when the surge in output made possible by the new investment undertaken during the boom reaches the market. Unemployment begins to emerge, but this is chiefly technological unemployment caused by new productive techniques – since total output is actually rising. Only in the depression do the conventional symptoms of high unemployment, business failures, and falling GDP begin to appear. In terms of typical Business Cycle models, Schumpeter's is almost the inverse: constant or slowly increasing output in

[1] Kuznets, 'Schumpeter's Business Cycles', p. 271.
[2] McCraw, *Prophet of Innovation*, pp. 276-77.

the boom, rising GDP in the recession. This may well be correct: but it is hard to discern in economic data, where rapidly growing GDP would usually be taken to indicate a boom not a recession!

The second problem was timing: how *long* was a Schumpeterian Business Cycle? Schumpeter himself was non-committal regarding the duration of his cycles and, when outlining his own theory in the earlier part of the book, dismissed the idea of a fixed periodicity. As he wrote:

> There is nothing in the working of our model to point to periodicity in the cyclical process of economic evolution if that term is taken to mean a constant period. And there is no rhythm or cycle if we choose to define either of them with reference to periodicity in that sense. But both rhythm and cycles are present in a much more relevant sense. For there is a process which systematically produces alternating phases of prosperity and depression through the working of a definite mechanism set in motion by a definite 'force' or 'cause.' All we can thus far say about the duration of the units of that process and of each of their two phases is that it will depend on the nature of the particular innovations that carry a given cycle, the actual structure of the industrial organism that responds to them, and the financial conditions and habits prevailing in the business community in each case.[1]

Judicious (if typically verbose) words. Yet one can reasonably speculate that a Schumpeterian cycle would require quite a few years to unfold – perhaps a decade or even two. Why? We start with a swarm of innovations brought about by the scarce resource of visionary entrepreneurial leaders. This involves taking new ideas and operationalising them, overcoming technical problems, borrowing funds and using them to draw resources into the new growth sector and so on. These are not simple matters and the history of the cotton industry, the rail and electrical industries, of automobiles, and computing show these developments take several years. Then this leading technology has to be taken up by following firms and become pervasive through the economy. The steam engine, for example, took decades to become generally deployed in British industry outside of cotton spinning. Then the fruits of this technology lead to a surge in output, which drives down prices and eliminates old-school firms and so a recession and depression develop, which in turn must be cleared by market adjustments to stabilise the economy before conditions are ripe for a new innovative surge. All this must be expected to take 10, 15, 20, or even more years for fundamental innovations. And this time is needed: remember, for Schumpeter the cycle is ultimately due to the scarcity of entrepreneurial talent. Once a generation of entrepreneurs has initiated a boom, time must elapse for a new generation of entrepreneurs to re-constitute themselves and this again must take about ten years or so, and of course they need to find an economy that is stable, where risks are low, and where banks have recovered from the failures of the depression, and be ready to lend again.

[1] Schumpeter, *Business Cycles*, Vol. I., p. 143.

If, then, we are to talk of an innovation-driven cycle it must be one of around, say, 20-30 years. Interestingly, Schumpeter notes that Kuznets had recently suggested the existence of a 25-year cycle – which probably most closely conformed to his own reasoning. Yet he did not pursue this. Instead, he inferred that innovation cycles would not produce coherently predictable cycles for the plausible reason that innovations would differ so much in scale and importance that 'if innovations are at the root of cyclical fluctuations, these cannot be expected to form a single wavelike movement, because the periods of gestation and of absorption of effects by the economic system will not, in general, be equal for all the innovations that are undertaken at any time.'[1] *If so, there could not be a distinctively regular Schumpeterian cycle at all: there would be a complex series of innovations causing eddies and waves of varying size as the economy developed*. This reaffirms that Schumpeter's model could not be confirmed statistically, and that a series of case studies was the best way to provide evidence for his ideas. But Schumpeter wanted to produce a book about Business Cycles and he had always believed that economics could be an exact science verified by data. So, rather than abandon the search for his own cycles in history, and rather than accept that there might be numerous cycles all interacting at the same time, he decided to select three cycles from among the existing statistical accounts of the Business Cycle. These were the 50-year 'long-wave' cycles of prices identified by Kondratieff in the 1920s, the 7-11 year cycle identified by Juglar, and the 40-month cycle discerned by Joseph Kitchin. These cycles were established in the literature by the time Schumpeter started work on his *Magnum Opus*.[2] But they did *not* emerge out of Schumpeter's theory and had no clear or precise relationship to it. As he himself acknowledged: 'it cannot be emphasised too strongly that the three-cycle schema does not follow from our model …'[3] Indeed, approval or rejection of the three-cycle schema 'does not add to or detract from the value or otherwise of our fundamental idea …' In other words, Schumpeter was about to embark upon 800 pages assembling evidence for three cycles which had no bearing upon his own theory. They were simply cycles which other authors had claimed to have discovered and none of them were *innovation* cycles at all. Kitchin's, for example, is a very short cycle linked, probably, to firms adding to then running down inventories: it could not have any connection to innovations.[4] Yet curiously, Schumpeter also claimed that all the cycles, whatever their length, were 'to be explained in terms of the process of economic evolution described by our model. Innovations, their immediate and ulterior effects and the response to them by the system, are the common "cause" of them all …'[5] This was a bold assertion which only confirms that Schumpeter did not even attempt to approach his data in a critical spirit at all. He takes his innovation theory

[1] *Ibid*., pp. 166-67.
[2] Schumpeter had the highest regard for Juglar, whom he considered 'among the greatest economists of all time.' J. Schumpeter, *History of Economic Analysis* (Oxford University Press, Oxford, 1954), p. 1123.
[3] Schumpeter, *Business Cycles*, Vol. I., p. 169.
[4] C.f. Lange, 'Business Cycles', p. 192.
[5] Schumpeter, *Business Cycles*, Vol. I., p. 172.

for granted, evidence regarding the three cycles having no capacity to verify or reject it, and all cycles are assumed in any case to be caused by innovation. In a letter to Wesley Mitchell in 1937 Schumpeter wrote that that 'I file no theoretical claims for the three-cycle schema. It is a descriptive device which I have found useful.'[1] In truth, it couldn't have been *less* useful. Despite having no theoretical basis and only the most questionable statistical reality, Schumpeter, in his *Business Cycles*, having first sketched his own Business Cycle theory along lines little changed from his 1911 work, then says that he regards the Kondratieff, Juglar, and Kitchin cycles to be confirmed by the data and proceeds to fill up 800 pages on the assumption that they are all simultaneously true. He even says that he toyed with the idea that there were five cycles – but discarded the notion since 'the improvement in the picture would not warrant the increase in cumbersomeness.'[2] To have proven and justified even one of his three cycles would have been achievement enough. But, not only was this not Schumpeter's responsibility, since none of these theories was his or arose from his work, but he didn't even seek to establish these Business Cycle models: rather he took them over *in toto* and then merrily wrote as if they were facts, continually judging data in the light of them – when really it should have been the other way around. He even concluded that the three distinct cycles fitted together in a necessary way: 'each Kondratieff should contain an integral number of Juglars and each Juglar an integral number of Kitchins.'[3] It was if he had uncovered the hidden key to the mystery of economic life.

Through his pages Schumpeter accumulates large quantities of data and presents numerous tables and charts, in each case looking for evidence for Kondratieffs, Juglars, and Kitchins, noting turning points for one, troughs for another, periods when they diverged or converged – believing that major depressions occur when the down-phases of all three happen simultaneously. The result is a hopeless muddle. Far from elucidating and verifying his *own* theory, he became a kind of cheer-leader for other people's cycles – it would be too strong to call them theories, for they were more patterns than explanations. Now the attitude of the cheer-leader is the worst-possible if one wants to test and verify a theory. Although not using statistical analysis, Schumpeter repeatedly turns to statistics in an impressionistic way: looking at a table of complex line-graphs, he uses his eye to locate the various cycles and their timings. Rather like a cloud-spotter, convinced that cloud formations display certain recurring patterns, he says – look, there is a Kondratieff; mingled with it is a Juglar; oh and here the Kitchin is well defined! When the looked-for configuration fails to display he presses on perplexed, or attributes its absence to some external disturbance like a war or act of government policy. The resulting narrative is highly subjective, a personal account of 150 years of economic history by someone who presupposes that the pulse

[1] Quoted in McCraw, *Prophet of Innovation*, p. 253.
[2] Schumpeter, *Business Cycles*, Vol. I., p. 169.
[3] *Ibid*., p. 172.

of economic life is supplied by Kondratieff, Juglar, and Kitchin – his own personal theory of the Business Cycle getting lost along the way. The reader is overwhelmed by the endlessly swirling material and little by way of light emerges from the effort. **Figure 6** provides a glimpse into Schumpeter's method.

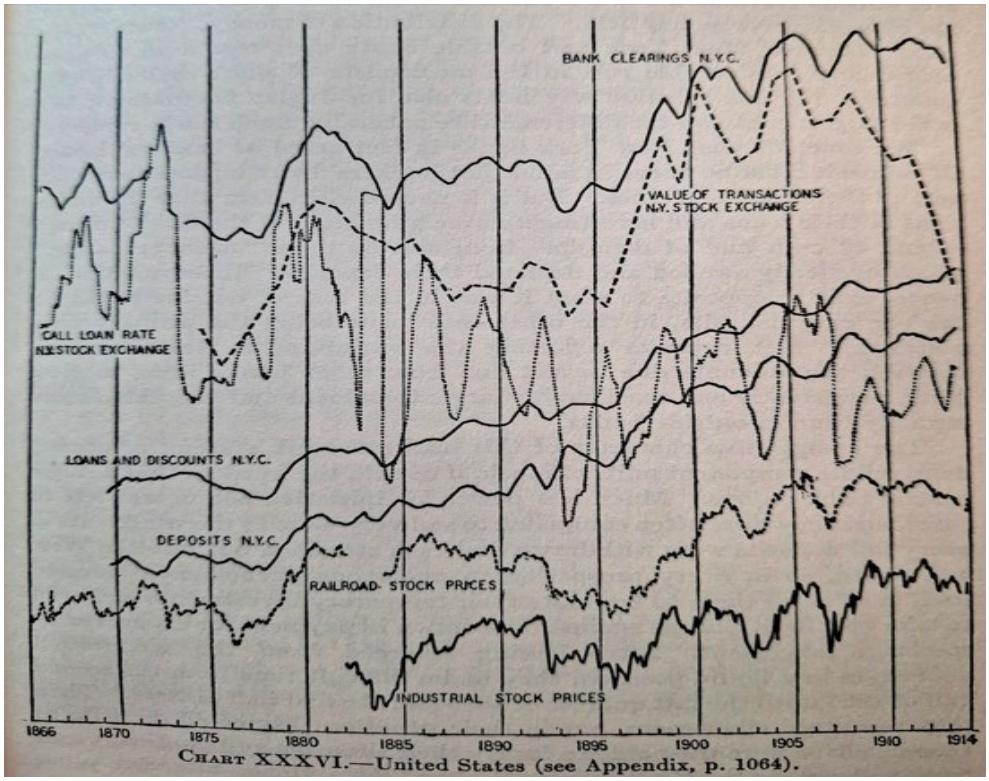


Figure 7. Schumpeter's Chart XXXVI from his *Business Cycles*

This chart, taken from Schumpeter's chapter on banking and the stock market during Business Cycles, tracks no fewer than seven data series – and all without a scale on the y-axis. With reference to this chart, Schumpeter writes as follows:

> The fairly marked covariation of railroad stock prices – as long as these are the dominant element, i.e., to the nineties – and of railroad and industrial stock prices with New York loans and deposits, and their strongly marked covariation with New York Clearings should again be noticed first. In both railroad and industrial stock prices the Kondratieff prosperity from 1897 on shows well and so do the Kitchins. The major movements which we observe, however, clearly reflect the Juglars: we see the (anticipating) boom of 1868 and 1869 and the characteristic slump from 1873 to 1877; then the (also anticipating) boom from 1877 to 1881; the same phenomenon, most regularly repeated from 1885 on; no such precedence for the first Juglar of the third Kondratieff, which may have been due to the aftereffects of 1893 and political factors; but more regular behavior again in the second.[1]

This passage epitomises Schumpeter's method. One can see how he embraces the reality o f the various cycles he refers to and how he professes to spot their complex

[1] *Ibid*., Vol. II., p. 686.

and subtle interactions from a visual inspection of an extremely complex diagram. The reader can do little more than acquiesce in what is being asserted and wonder how much truth lies behind the whole thing. In fact, the entire enterprise was futile – for two reasons.

First, as we have observed, the cycles he was trying so hard to find had no clear relationship to his own theory. How could they? How could a theory of cycles due to the innovations of a few remarkable entrepreneurs simultaneously generate fifty-five-year, ten-year, and forty-month cycles? Schumpeter even felt able to declare that there were 'six Juglars to a Kondratieff and three Kitchins to a Juglar – not as an average but in every individual case.'[1] But why were there three Kitchins in a Juglar, and why six Juglars to a Kondratieff? Schumpeter admits that 'there is no rational justification that the writer can see for assuming that the integral number of Kitchins in a Juglar or of Juglars in a Kondratieff should always be the same.'[2] More to the point, how did entrepreneurial innovation yield such regularity? No reason is given. Yet for Schumpeter the data showed that the cycles *were* so integrated, and he proceeded to write page upon page on the assumption that they were.

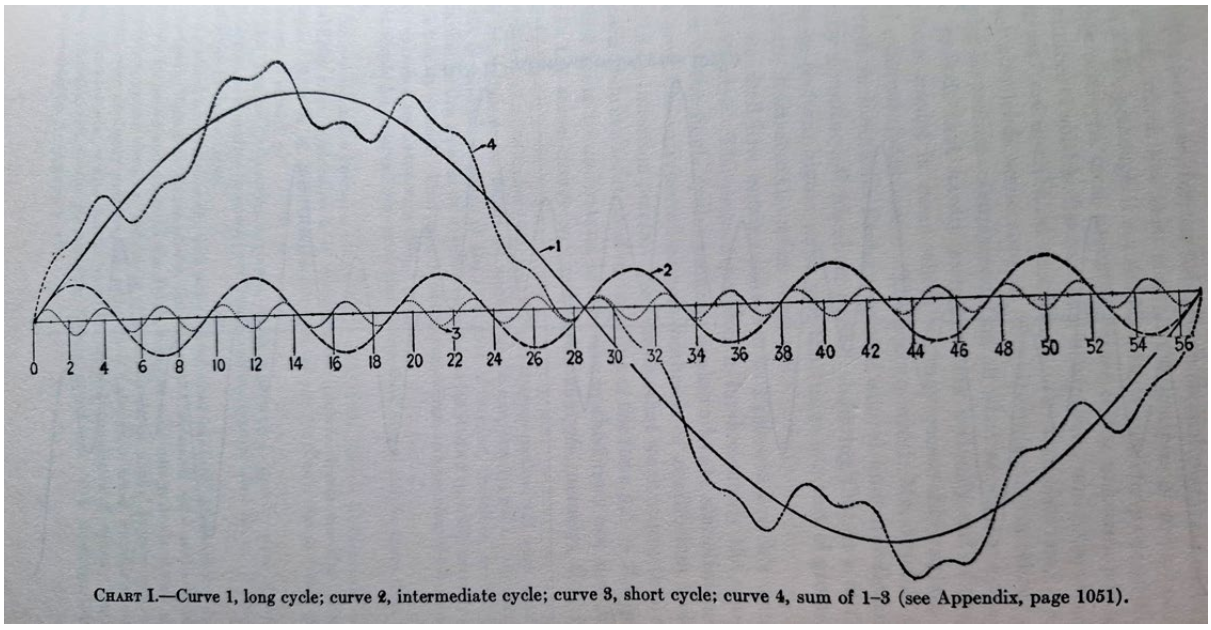


CHART I.—Curve 1, long cycle; curve 2, intermediate cycle; curve 3, short cycle; curve 4, sum of 1–3 (see Appendix, page 1051).

Figure 8. Schumpeter's Schematic Outline of the Three-Cycle Model

Figure 8 displays Schumpeter's suggested trajectory of the Kondratieff (long-cycle), Juglar (intermediate cycle), and Kitchin (short-cycle), the irregular curve four being the combination of them all. Of all the cycles he presents, the Kondratieff has the closest

[1] *Ibid.*, Vol. I., pp. 173-74.
[2] *Ibid*., p. 173.

affinity with his own work. Schumpeter's approximate dating of the Kondratiev cycles is as follows.[1]

First Kondratieff – Industrial Revolution	Second Kondratieff – Railway Age	Third Kondratieff – Electricity and Cars
Prosperity – 1787-1800	Prosperity – 1843-1857	Prosperity – 1898-1911
Recession – 1801-1813	Recession – 1858-1869	Recession – 1912-1925
Depression – 1814-1827	Depression – 1870-1885	Depression – 1926-1939
Revival – 1828-1842	Revival – 1886-1897	

Table 1. Approximate Dating of Kondratieff Long-Waves

One does see, here, a potential relationship between these Kondratieff cycles and Schumpeter's own theory of entrepreneurial-led growth. There *was* an acceleration in economic growth linked to the development of the steam engine in manufacturing and then a further impetus provided by the use of the steam engine in transport, which overturned established production functions as Schumpeter described (especially in the United States), and then a further wave of innovations, often called the Second Industrial Revolution, connected with electrical, chemical, and automobile industries. Such developmental waves of capitalist expansion provide good evidence for Schumpeter's ideas. Yet problems remain if this insight into the nature of capitalist growth is to also pass muster as a theory of the Business Cycle. Why should major waves of innovation occur approximately every fifty or fifty-five years? This is not explained and doesn't fit well with Schumpeter's theory. Schumpeter believed that scientific and technical knowledge grew continuously: what was *discontinuous* was the available supply of entrepreneurs willing and able to exploit the profitable potential of these new ideas. Why should such swarms of entrepreneurs occur roughly every fifty or so years? This would mean whole generations would pass bereft of entrepreneurial talent. This is not the time-frame implicit in Schumpeter's account from his 1911 book. In that book he says that capitalism grows *through* innovative discontinuity – but at the time of writing there had only ever been three Kondratieff waves of capitalist growth, and that remained true when he wrote his *Business Cycles* twenty years later. To generalise from three waves of prosperity (40 years in total) to say that capitalism could *only* develop by such waves and not exist in any other way seems unfounded exaggeration. The cycles of capitalist development envisaged in *The Theory of Economic Development* were surely far more frequent than that. More generally, was a record of 2.75 completed Kondratieff's a sufficient body of evidence to establish their reality? Phases of development stretching over 50 or more years are inevitably subject to an array of exogenous events, all with the capacity to accelerate or disrupt

[1] This table is taken from Kuznets's attempt to derive a chronology of the Kondratieffs from Schumpeter's text. 'Schumpeter's Business Cycles', p. 261.

growth or stimulate technical change – we might think of the French Revolution, the Napoleonic Wars, the American Civil War, Franco-Prussian War, the rise of Protectionism, World War One, Spanish Flu, the Bolshevik and Nazi Revolutions, and so on. The actual record of capitalist growth will reflect such exogenous non-economic events as well as unpredictable economic events – bank failures, expansionary monetary policies, gold discoveries and such like.[1] What Schumpeter identifies as phases of capitalist expansion can be explained *without* reference to a long-range Kondratieff wave effect. The Industrial Revolution is a discreet turning point in the history of European economic growth and its causes have been debated endlessly. Does it really help to interpret it through the lens of Kondratieff upswings, Juglars, and Kitchins? This is what Schumpeter proceeds to do – passages such as the following being typical of his historical analyses:

> So we date – and all doubt there can be about this turns on the processes of the preceding years – the rise of the Kondratieff and of its first Juglar from 1787 (inclusive). That there should have been (a little more than) six years of boom – the dent in 1788-1789 does not mean much and really invites interpretation as a Kitchin depression – which, according to our schema, means that business went on improving right through a Juglar recession and into a Juglar depression, is perfectly in keeping with expectation for a Juglar that runs its course entirely on a Kondratieff prosperity.

Several points are apparent. First, whereas Schumpeter stated that the Kondratieff-Juglar-Kitchin framework was simply a convenient way of marshalling evidence and had no theoretical basis, in practice he forgot this caveat and writes as if they are established conceptually valid entities that accurately capture the historical facts. They had become real for him, so real, in fact, that they steal the show and drive the narrative. Second, that data is interpreted wholly within their framework. A one-year movement down in a series becomes a 'Kitchin depression', six years of growing output becomes a 'Juglar boom', business grows through a Juglar recession and a Juglar depression, the whole thing underpinned by a 'Kondratieff prosperity'. The entire framework is taken for granted and holds whatever the data suggests. Third, reading such passages is bewildering and fatiguing. The reader cannot keep their bearings and soon gives up trying to do so – a tangled web is weaved and all the reader can do is suspend critical judgement, reading in a kind of haze. No wonder Paul Samuelson considered the result 'Pythagorean moonshine'.[2]

With respect to Britain's industrial development, the early steam engines were highly inefficient – large, heavy, and consuming huge quantities of coal. Gradually the technology was refined, coal consumption reduced, and weight diminished – such that by the 1820s steam technology had evolved so far as to make steam locomotion possible, opening-up wide new possibilities for innovation and growth. The technical and commercial logic is clear and there is no reason to connect the early Industrial

[1] Schumpeter admits this. C.f. *Business Cycles*, I., pp. 175-78.
[2] Quoted in R. Swedberg, *Schumpeter: A Biography* (Princeton University Press, Princeton, 1991), p. 135.

Revolution of the 1780s with the emergence of the 'railway age' of the 1830s through a convoluted Kondratieff cycle of recession, depression, and recovery – all played out against the background of European war which played havoc with export markets. To do so is misleading and would not be attempted by any serious student of British economic history. Similarly, no one would link the emergence of the electrical industry in the 1890s to some commercial logic established by railway building in the 1840s. But Schumpeter, committed as he was to the existence of Kondratieff waves providing the hidden drum beat of capitalist development, sees them operating inexorably behind the veneer of everyday events, not stopping even for global wars. It is hard not to think of the whole thing as having affinities to other cyclical theories of history popular at the time Schumpeter was writing – most obviously Spengler's.

Second, Schumpeter's method for validating the existence of his three cycles was inadequate. It consisted of selecting various indicators and variables and then finding evidence for cycles in the data. Testing data for indications of periodic cycles of any type is clearly justified. But for this a range of statistical techniques would be required – removing trend, constructing moving averages, isolating series and locating precise turning points, and no doubt more sophisticated statistical methods. None of this Schumpeter does: his method was wholly impressionistic, in which he looks at a series of charts full of moving lines and says 'there are signs of a Juglar here', 'the Kondratiev is clearly visible between these dates', 'we witness a series of clearly defined Kitchins' and so on. Kuznets made this point:

> Statistical analysis is confined to a graphic portrayal of the series, sometimes reduced to successive rates of percentage change, sometimes smoothed by a simple moving average, and in one case with a fitted trend curve and fitted cycles. The preponderant number of series are, however, left in their original form and statistical analysis for almost all of them is in the form of qualitative statements of quantitative import, based on the observation of charts …. The failure to follow articulate methods of time series analysis reduces the statistical methods to a mere recording of impressions of charts, impressions with which it is often difficult to agree.[1]

Many of these readings of graphs could be questioned and when the data does not support his argument he doesn't refer to it or explains it away. His entire approach was idiosyncratic, subjective, and curiously old-fashioned for a founder of the Econometric Society. No econometric analyses are used at all. It was also dependent on the quality of the data. One suspects that much of the data used has been superseded or revised since Schumpeter's time, which would mean his cycle-timings would need to be revised and converging cycles, upon which he attaches such importance, might well no longer converge.

Thus, after wading through page after page of data and descriptions relating to three cycles in three countries (the UK, USA, and Germany) over two centuries, the reader emerges fatigued and bewildered. Few can ever have properly accomplished the task

[1] Kuznets, 'Schumpeter's Business Cycles', p. 265, 269.

and the sheer unreadability of his book was one reason for its limited impact. As Schumpeter later confessed to Gottfried Haberler, 'few if any people have read my ponderous volumes really through'.[1] It is hardly surprising to learn that, when Schumpeter organised a special seminar at Harvard in 1939 to discuss his book, he became furious to discover that virtually no one had read his volumes and the conversation soon turned to Keynes's *General Theory of Employment, Interest, and Money*.[2] And here was a further problem. Schumpeter's book appeared three-years after Keynes's *General Theory*, a work in which Keynes presented a *theory* of economic activity that students could grapple with and try to understand – and which was already being reduced to a series of equations by the likes of Hicks and Samuelson. It also had policy implications which seemed urgent given the economic devastation of the Great Depression. Schumpeter, by contrast, made a point of stating that his work contained *no* policy prescriptions: 'I recommend no policy,' he wrote in the preface, 'and propose no plan. Readers who care for nothing else should lay this book aside.'[3] He aimed to *describe* Business Cycles – not diminish them. Indeed, Schumpeter rejected the entire premise of Keynes's work. Schumpeter regarded Business Cycles as integral to the capitalist growth process. To endeavour to eliminate them was absurd, and if they were, by some means, eliminated, capitalist development would be eliminated too. Schumpeter was like an anthropologist, observing some ritualistic sacrifice seen as essential to the life of the tribe; he did not regard it as right, morally or practically, to intervene to stop it. Yet such a neutral, a-theoretical, approach to *the* pressing economic problem of the day was alien to the mind-set of the young economists of the 1930s, many of whom entered economics precisely to find the causes and cures for the Great Depression and were being drawn into working for the New Deal. For them his work was remote, a vast exercise in descriptive economic history when what the world needed was a theory to make sense of the Depression and how future ones might be averted. The next few years delivered the *coup de grace*: within weeks of Schumpeter's book appearing World War Two began, and while Keynes provided an approach to running a war economy, Schumpeter had nothing to say about this – no doubt thinking his Kitchins, Juglars, and Kondratieffs would continue to determine the pulse of economic activity through the war years. By the war's end, the Byzantine edifice of Schumpeter's Business Cycles went the same way as many of the similarly elaborate empires at the end of the First World War, becoming what Kenneth Galbraith called a 'scholastic oddity.'[4]

Fortunately, Schumpeter grasped his mistake of excessive, undisciplined, verbosity in his *Business Cycles*, since upon its completion he set about writing a totally different kind of book: *Socialism, Capitalism, and Democracy.* Where *Business Cycles* took

[1] Quoted in McCraw, *Prophet of Innovation*, p. 271.
[2] *Ibid*.
[3] Schumpeter, *Business Cycles*, I., p. vi.
[4] Quoted in Swedberg, *Schumpeter*, p. 128.

around seven years to write and added up to 1,077 pages, *Socialism, Capitalism, and Democracy* was written in about two years and consisted of a comparatively modest 376 pages. More importantly, the shorter book was also far more alive, insightful, and relevant, and demonstrated what was Schumpeter's real strength, the mingling of economics with social, cultural, and political history. Some of these reflections first appeared in *Business Cycles*, where they had been submerged beneath the mass of narrative detail. Freed, now, they stood out properly for their worth and Schumpeter coined the phrase which has since come to encapsulate his whole approach to capitalist development through innovation: 'creative destruction.'

Conclusion

Schumpeter's reputation rests upon one important insight: namely that capitalist 'evolution proceeds by successive revolutions'.[1] It was this idea that underpinned his *Theory of Economic Development* and *Business Cycles*, and informed his *Capitalism, Socialism, and Democracy* too. It was a pioneering idea and has ensured that Schumpeter remains a highly relevant economist today – one of the most frequently cited in popular economic discourse. Two aspects of this sentence were of seminal importance. One was the concept of evolution. When Schumpeter first developed his ideas on economic development, most theoretical approaches to economics focused upon static or comparative static analysis. The classical economists *had* spoken about development, yet the marginalist revolution pushed economics towards the study of equilibrium conditions and interest in the dynamics of capitalist change had been lost. Schumpeter placed development and change at the centre of his analysis and this bold insight has since only gained in significance. Second, Schumpeter linked evolution with revolution. This was the bigger insight. Economists within the classical tradition had constructed models of development, but these models were themselves static: in effect they extrapolated short-term processes into the future and this caused them to envisage tendencies towards a stationary state. They lacked imagination, seeing the future as a less productive version of the past. The one exception was Karl Marx: for Marx, like Schumpeter, capitalism was an inherently revolutionary mode of production. The difference was that Marx also saw it as transitory and, like the other classical economists, foresaw a gloomy future for capitalism – so gloomy, in fact, with rising unemployment, growing inequality, immiseration of the proletariat, and falling profits, that the system would soon be overthrown entirely. Schumpeter agreed that capitalism was revolutionary, but saw this as the mainspring of its future, with its capacity for rejuvenation as revolutionary technology repeatedly raising profits, productivity, and living standards. In this he proved the greater prophet. It is notable, too, that while evolution as a concept had gained in salience in the later nineteenth

[1] Schumpeter, *Business Cycles*, Vo. I., p. 226.

century under the impact of Darwinian ideas, where Darwin had seen evolution as the aggregation of countless tiny changes unfolding over huge durations of time, Schumpeter saw evolution as episodic, with surges and lapses, ups and downs, ebbs and flow – a fundamentally *discontinuous* process. This again was a brilliant insight.

Yet the very greatness of this insight exerted a negative effect on Schumpeter's work. First, it overshadowed his subsequent thinking. Such an insight at an early age had the effect of crowding out any further thinking. Ironically, he was a victim of the very fixity of thinking he exposed in the classical school: once arrived at in 1911, his ideas essentially reiterated themselves and he failed to evolve himself – as witnessed by his hostile attitude towards Keynes's *General Theory*. For there *was* a revolution of the kind he ought to have celebrated, one opening-up new vistas of analysis, new approaches to economics – and new opportunities for what one might call 'entrepreneurial academics' seeking Super Normal scholarly profits. But Schumpeter was having none of it. His mental framework remained that of his Austrian youth. Second, having had his big idea, Schumpeter sought to stretch its applications to wider areas of economic life. In particular, he saw it as a key to the emerging discipline of Business Cycle studies. One can see why: like him, Business Cycle theorists saw capitalist growth as unstable, with periods of prosperity yielding to recession, which helped clear the way for future growth. This sounded a lot like Schumpeter's vision. So early as 1911, he had drawn attention to how his theory of capitalist development could shed useful light upon the cyclical pattern of capitalist growth. And it did. Innovation raising production functions and hence investment opportunities would surely be a relevant insight into the episodic pattern of actual economic activity. The problem was to go from this insight into claiming that it was *the chief and ultimate cause of all Business Cycles*. Of course, it may have been – but this needed to be established by detailed and careful empirical and statistical work. This Schumpeter did not do. He painted in broad strokes and while he did accumulate lots of facts, his handling them was too slap-dash, too impressionistic, and, above all, it was all done *on the assumption* that his theory was correct. He was blinkered by his own initial vision.

Most significantly, a model of evolution through revolution was not a Business Cycle model. Revolutions are unpredictable, disruptive, unstable. They are hard to predict, since by their very nature they overturn existing systems and re-draw parameters. Business Cycle analysis occurs *within* a system, working within a body of assumed relationships. It seeks to understand why a *given* system may experience rises and falls of activity. Schumpeter's whole insight was that systems themselves were not stable. And within this paradigm it was impossible for Business Cycles to be stable. In many places in his book he acknowledges this and speaks almost of permanent revolutions, admitting that to periodise a cycle is impossible. Yet he still wanted to generate a theory of the Business Cycle and his solution to this dilemma was to write virtually a second book within the first – a book which describes economic history on

the assumption that Kondratieff, Juglar, and Kitchin cycles were real and useful organising concepts. This was a very different and frankly incoherent project. Not only was it probably impossible, it was also futile for, as he acknowledged, his theory didn't stand or fall by these other cycles at all. It was if he took his theory on a holiday in foreign lands where nothing that happened really mattered so far as Schumpeter's island was concerned. The result comes close to absurdity and means that his *Business Cycles* was soon forgotten and hardly ever read. As Oscar Lange remarked, what Schumpeter provided was 'a thorough-going and comprehensive study of economic evolution under capitalism.'[1] So it was. What it was *not* was a worked-out theory or analysis of Business Cycles. It is not the Schumpeter of the *Business Cycles* that is remembered but the Schumpeter of the *Theory of Economic Development* and *Capitalism, Socialism and Democracy*. The Schumpeter of the intervening years is hardly referred to – they were the years of heroic failure and Schumpeter's personal depression in the early 1940s owed much, no doubt, to that fact.

[1] Lange, 'Business Cycles', p. 190.