EXPLAINING LONG WAVES OF CAPITALIST DEVELOPMENT

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Although basic innovations are bunched in a 'countercyclical' manner during the depressive phases of long waves, they do not themselves *cause* the transition to an expansionary boom phase. Explanation of the turning points must be sought elsewhere. Long-term changes in the average rate of profit are the main cause of fluctuations in the system, but these are related to other fundamental features of the capitalist mode of production. Whereas the upper turning points from the boom to the depressive phase are determined largely by endogenous factors, especially the rise in the organic composition of capital (growth of capital intensity), this is not true of the lower turning points. Exogenous 'system shocks' of various kinds are needed to propel the system out of the depressive phase. This is the arena of acute social and political struggles, whose outcome is by no means mechanistically predetermined.

IT IS AMUSING that the long waves of capitalist development also produce long waves in the credibility of long-wave theories, as well as additional long waves of these theories themselves.

In the mid–1960s, we were somewhat alone in predicting that, towards the end of the decade, the long postwar boom would end and a new long wave with depressive trends would be initiated.[1] The overwhelming majority of economists were of a different opinion: they argued either that no such turning point was to occur, because Keynesian and neo-Keynesian techniques had overcome the system's propensity to produce long depressions; or, in so far as they were addicted to the classical neo-liberal school, especially in its monetarist variant, they saw the long boom ending exclusively as a result of inflation, without trying in the least to tie in this prognosis with an examination of what had happened to the capitalist economy from the wars of the French Revolution until the second world war.

Since the beginning of the 1970s, the situation has changed radically. We have seen the credibility of long-wave theories, which had dropped to near zero

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during the previous decades, rise dramatically as it had done, for similar reasons, in the interwar period. When reality stares you in the face instead of you having to dig for it below the surface of appearances, it is hard to stick to the position that its existence remains unproven. So one after another, the pundits of the profession have jumped on the long-wave theories' bandwagon, Samuelson being the latest of a steadily growing list.[2]

In all that undoubtedly creative turmoil, the real problem, however, remains largely unsolved among most academic and professional economists. It is often obscured to the point where it is not even posed. The question is not just to find all kinds of statistical correlations between cyclical and anti-cyclical phenomena operating within time-schedules encompassing several ordinary business cycles. Such discoveries are, of course, useful and, when seriously verified by empirical data, they have to be integrated into a more fully developed theory of the long waves in the history of the capitalist economy. But they cannot, in and by themselves, *explain* why, at certain points in time, a depressive long wave turns into an expansionary one, and vice versa.

Such an explanation can only be structured around *causal* relationships, which have to find their place in the framework of a general theory of how capitalism operates as a system (Marxists would say: of the general laws of motion of the capitalist mode of production). It stands to reason that, in the same way that business cycles, which have repeated themselves more than 20 times on the world market for industrial goods since 1825, have to be related to the system's inner contradictions, so have long waves of capitalist development, which have occurred at least seven times in the same period.

We would wholeheartedly agree with the argument that such a theory, in order to be scientific, must not only be empirically verifiable and falsifiable, but must be constantly checked and rechecked in the light of new long waves, as well as in the light of new data appearing about old ones. But there is something basically different between establishing statistical correlations and establishing causal relationships.

Causes of long waves

Let us take two examples. Gerhard Mensch has argued, convincingly in our opinion, that basic industrial innovations generally occur anticyclically under capitalism. If we take his list of those basic innovations in the first half of the 20th century with a rather long time lag between invention and innovation—never mind whether this list is exhaustive or not—no less than 29 out of 41 such innovations occurred during a depressive long wave (to arrive at that figure, we distinguish here for the 1944–45 period between the USA, where the long boom had already started in 1940, and Europe where it started only in 1948). That degree of correlation is high enough to deduce a general law from it, which, incidentally, fits in well with Marxist business-cycle theory. But it offers no explanation of why and how the turning point between a long depression and a long boom occurs.

Indeed, if it pretended to offer such an explanation, it would contradict itself in a paradoxical way. For if innovations are countercyclical, they certainly do not precipitate in the short term a basic change from a long depression to a long

boom. A bunch of innovations occurring in 1930 or in 1935 cannot explain why the long depression ended only in 1948 in Europe and Japan (in 1940 in North America). It is sufficient to note that aggregate investment remained largely stagnant throughout the 1930s in the USA in order to understand that the innovations mentioned by Mensch have not, by themselves, precipitated that basic turn.

The idea that innovation creates more or less automatically an expansionary long wave, if only it is broad and sustained enough, is utterly misleading. Large-scale innovation only creates a long wave of sustained and increased growth if there is simultaneously a significant broadening of the market, and a rate of growth which leads towards a high level of employment. But innovation can lead to increased unemployment and thereby a stagnating market for final consumer goods and stagnant overall investment. According to David Foster, a computer which it takes 350 men/years to produce replaces 4 000 men/years in the service industry.[3] Surely, all things remaining equal, such types of innovation will not lead to sustained high levels of economic growth.

Monetary and psychological factors

The same applies to all those variants of long-wave theory which emphasise essentially monetary and psychological factors ('the general economic climate'), as eg those theories linked with Cassell's gold hypothesis or with Dupriez' generation concept (a generation which is too permissive regarding credit expansion is said to be regularly succeeded by a generation which is too cautious with regard to credit). Here again, empirical evidence seems to confirm an undeniable correlation. Price declines dominated the 1873–93 depression, as they did in the 1913–39 period. Despite appearances, they dominate the present long wave as well (prices expressed in gold, this is, and not in constantly depreciating paper currencies). Conversely, price rises dominated the expansionary long waves of 1848–73, 1893–1913 and 1940 (48)–1970. Abrupt changes in government and central bank attitudes, determined by general changes in bourgeois 'public opinion', have obviously influenced these turning points, as have objective phenomena like sudden ups and downs in the value of gold (the productivity of labour in gold mining).

But it seems clear that these changes are consequences rather than causes of what makes the system as a whole move towards slower or faster long-term growth. It is not because the (bourgeois) public becomes pessimistic that growth slows down. It is because the signs of growth slowing down make capitalists become more pessimistic about their own prospects, and governments suddenly go all out to 'fight inflation'. They did not act in that way for as long as growth was buoyant.

Better still: inflation could stay 'mild' and appear to be 'kept in hand', precisely because growth was smooth and seemed self-reproductive, ie because real surplus-value fuelled capital accumulation. Inflation got 'out of hand', became 'cumulative' and was nourished by 'anticipation' precisely because growth *was* slowing down; larger and larger parts of big firms' investments had to be financed through credit expansion and not through the accumulation of real surplus-value, at the same time as a growing part of consumer expenditure had to be financed through credit, ie inflation.[4]

Profit expectations which govern investment are not purely speculative. They are above all (though not exclusively) a function of *past and present profit realisation*, and of fluctuations in the average rate of profit. So the 'generation cycle', while undoubtedly correlated with the long waves, cannot explain the key turning points in the history of the capitalist economy.[5]

Fluctuations in rate of profit

More generally, as strongly as we reject any 'monocausal' explanation of the business cycle, we reject any 'monocausal' explanation of the succession of long waves in capitalist development. While dissymmetry between the turning point of a long boom into a long depression, and the turning point from a long depression into a long boom, have to be emphasised,[6] we believe that the expansionary long waves result from an interaction between multiple, partially autonomous variables, leading to a sudden strong upsurge of the average rate of profit and a sudden rapid expansion of the world market.

The advantage of seeing in the fluctuations of the average rate of profit the main cause of the succession of long waves, lies in the fact that profit is, after all, what makes the system tick. Simultaneously, under capitalism it is an excellent synthetic index of the system's overall performance, measured in the light of its own logic. So to see in the long-term fluctuations of the average rate of profit the main cause of the long waves of capitalist development is not to substitute one monocausal explanation for another. Rather, it is to find a cause which is determined by a sufficient number of factors—partially interrelated, but partially autonomous from each other—so as to reflect the system's overall *modus operandi*, while at the same time sufficiently close to the system's heart as to make one understand why changes in *that* factor can precipitate a change in the way in which the system as a whole grows or does not grow.

Turning points in long waves from depression to boom

When we try to demonstrate that the long-term fluctuations in the average rate of profit determine the long waves of capitalist development, we can also solve a parallel problem which remains an enigma to many 'model-builders'—the largely decisive influence of exogenous factors (wars, revolutions, counter-revolutions, the outcome of sharpened class struggles, the sudden discovery of important new gold fields etc) on the turning point from a depressive into an expansionary long wave.

It would indeed be hard to pretend that the second world war and the ensuing Cold War had nothing whatsoever to do with the 1948–68 boom in Western Europe and Japan, as it would be hard to deny also the obvious relationships which exist between the revolution of 1848 or the full-scale unfolding of the era of imperialism after 1893, on the one hand, and the ensuing long booms following these turning points on the other.

There are essentially two ways in which these exogenous factors succeed, through their influence on the fluctuations of the average rate of profit, in precipitating expansionary long waves of capitalist development.

The bourgeois revolutions of 1848, the discoveries of the large-scale Californian (1848) and Transvaal (1893) gold fields, represent from the point of

view of the overall operation of the capitalist system, a sudden broadening of the world market not resulting directly from the previous cycles of expanded reproduction. The system is, so to speak, catapulted into a broader framework, by a 'system-shock' as it were, to use a cultural formula. This leads to a quickening of the pace of capital accumulation.

Likewise, fascism, the second world war and the cold war implied a sudden and sharp rise in the rate of surplus-value, only explainable by climactic historical defeats of the working class after decisive episodes of the class struggle. Such a sudden rise in the rate of exploitation of the working class—resulting essentially not from the previous cycles' inner logic of capital accumulation, but from a radical change in the overall sociopolitical environment in which the system operates (destruction of trade unions, elimination of bourgeois democracy, atomisation of the working class, impossibility of collective sale of the commodity labour power etc)—can, if it gets and maintains momentum, reverse radically the tendency of the average rate of profit to decline, thereby initiating a long-term upsurge of that rate, and, likewise, a long-term upsurge of capital accumulation, ie of economic growth.

Certainly, radical changes in the environment in which capitalism operates are insufficient to trigger off a long-term rise in the rate of economic growth (ie a long-term neutralisation of the factors which lead to a decline in the average rate of profit). They must combine with a series of parallel trends endogenous to the system, in order to lead to that result. Elsewhere we have examined how that combination operates in practice, and do not return to that problem here: we only emphasise that all these endogenous factors, however, will not come into their own if they do not receive an initial push from exogenous forces.

The outcome of momentous class struggles—as well as the outcome of big competitive struggles on the world market, inter-imperialist competition etc—is by no means preordained, in the Marxist system of analysis, by the given scope of capital accumulation. Otherwise, there would be little point in involving oneself in working class organisation and working class politics; only completely fatalistic determinism would be justified.

Transition from boom to depression and the falling rate of profit

To take up just one argument: one could defend convincingly the position that, for Marx, the level of wages is *not* determined by any physiological minimum to which wages were supposed to sink, but by the ups and downs of capital accumulation on the one hand (and its reciprocal—the ups and downs of the *conjunctural* reserve army of labour), and by the *structural* reserve army of labour on the other hand (the given historical level of industrialisation). But this is only true if one takes the capitalist mode of production as a totality, and one should add, as a *purely capitalist* totality.

But in real life, capital appears (*has to* appear) as 'many capitals', which in turn are structured into bourgeois (nation) states. Competition between these 'many capitals' and the bourgeois states, as well as the need to produce relatively stable capitalist class relations (maintaining the class struggle within certain bands with which the system can live), determine an international fragmentation of the labour market, ie *relative international immobility of labour.*

This explains why, under conditions of rising rates of capital accumulation, real wages can rise in industrialised countries, when demand for the commodity labour power exceeds supply on the national labour market, and while there are still huge untapped reserves of labour in underdeveloped countries.

Certainly, large-scale international migrations of labour generally accompany expansionary long waves throughout the history of capitalism. They explain why the boom can last long and be self-reproducing for 20–25 years, without wages going through the ceiling, ie without catastrophic declines in the rate of surplus-value. The 'national' reserve army of labour is regularly replenished through such migration. But these cannot go beyond a certain point as long as the labour market is fragmented into national markets and tremendous barriers remain erected against unlimited international mobility of labour. And that is why, towards the end of a long-term boom, there often occurs a stagnation or even a slight decline in the rate of surplus value, or, in any case a slowdown of its rise, which does not permit this rise to neutralise any more the forces imposing a decline in the average rate of profit.

This precise phase in the long waves has often been referred to as the one of the 'profit squeeze', and confused by many authors with the decline in the rate of profit. But for Marx and Marxists, these are two quite different concepts. They tend to be identical only for Ricardians and neo-Ricardians, who eliminate altogether from their calculations the fluctuations of the organic composition of capital, thereby making the rate of profit a straight function of the average level of wages.

For Marx, on the contrary, the decline in the average rate of profit is *not* due to any profit squeeze, ie roughly to any reduction of the share of profits in the national income. It is due to a decline in the ratio of profits to total invested capital, resulting from a disproportionate rise of that part of capital spent on equipment and raw material as against the part spent on wages.

In that sense, Marx's concept of the 'rate of profit' is, together with 'surplus value', the most specifically 'Marxian' of all concepts Marx uses, and for that very same reason, the most frequently misunderstood one. It is closely tied to the concept of the organic composition of capital and its tendency to rise over time, ie it is based on the assumption of a labour-saving bias in technical progress on a historical scale,[7] an assumption which, in turn, revolves around the function technical progress has to assume under capitalism—not only to cut production costs but also to increase profits by making labour more abundant by reconstituting the industrial reserve army of labour. This assumption should not be seriously challenged in the age of semi-automation, the microprocessor and robotism, which increased permanent unemployment in the West within one decade from less than 10 million to over 20 million.

The asymmetric nature of the two turns—the one from the long boom to the long depression, and the other from the long depression to the long boom—appears clearer in the light of this remark. Given the long-term tendency of the organic composition to rise, and the impossibility for the rate of surplus-value to grow uninterruptedly in the same rhythm as the organic composition of capital, among other factors because of the national fragmentation of labour markets, then what is true for the business cycle remains true for the long waves: the average rate of profit *will* start to decline in the second part of the long boom.

This will eventually lead to the turning point between the long boom and the long depression, for reasons intrinsic to the process of capital accumulation.

On the contrary, a long depression does not in and by itself free forces which precipitate a new long boom. These can only appear as the result of system shocks operating on the process of accumulation of capital, ie of exogenous forces operating on the general environment in which the accumulation of capital unfolds. And this leads to the conclusion that the turn from the long depression into the long boom is essentially *not predetermined*, ie it depends on the outcome of momentous political and social struggles—class struggles, inter-imperialist struggles, wars, revolutions, counter-revolutions—an outcome which only in the last analysis, and very indirectly, can be related to the process of capital accumulation itself, and this in turn only if different timespans are taken into consideration. In a certain sense this outcome depends much more on what occurred during the previous long waves, when these 'subjective forces' bearing on current social struggles were being shaped, than on what is occurring in the current long wave itself.

In that sense, it seems idle to speculate on whether the present long depression of capitalism could lead to a new long boom before the end of this century. In theory, the possibility cannot be denied. *If* the labour movement and the national liberation movement are defeated (and brutally defeated at that) in all the key countries and key struggles of the next decade or decades, *if* the workers let themselves be transformed into drones, *if* huge masses of capital and human beings are destroyed by dictatorships and wars (the last 'adaptation' of capitalism cost mankind 100 million dead—the next might well cost 500 million), then robotism, solar energy, electric motor cars, Huxley's *Brave New World* and a few other 'niceties' would indeed create capitalism's 'fourth age'. But it would look much like barbarism to us, and the cost in the form of regression of human civilisation and bonded labour would be frightening. It would be preferable for the present long wave of capitalism to remain historically as the final one—the one which leads to world socialism.

Notes and references

1. See E. Mandel, "The heyday of neo-capitalism and its aftermath" in *Socialist Register*, 1964.
2. Paul Samuelson, "The world's economy at century's end", *The Japan Economic Journal*, 10 March 1981, page 20.
3. Davis Foster, *Innovation and Employment* (London, Pergamon, 1980), pages 19–20.
4. Technically, one can prove that credit expansion is inflationary if it grows quicker than output.
5. On the asymmetry between the two turning points, see Ernest Mandel, *Long Waves of Capitalist Development* (Cambridge University Press, 1980), pages 51–56.
6. It is interesting to note that during long waves with depressive tendencies, while innovation does occur, funds for *large-scale cumulative innovations* (which make the diffusion of innovations possible) are not available, not because of an 'absolute' scarcity of capital, but because during such depressive long waves capital does not like to take too big risks. In a recent French report (by a banker, a high government official and an MP) the difficulty of financing innovation is attributed to 'comportement des Français préférant les placements immobiliers à leur industrie, manque de volonté d'entreprendre plus que manque d'idée, manque de pragmatisme des innovateurs nationaux" (*Le Monde*, 4 April 1981). But why was such behaviour not predominant during the 1950s and the 1960s? The argument is circular.
7. *Economie et Statistique* (of the French National Institute for Statistical and Economic Studies), November 1980, *127*, analysed the French capital/labour balance.