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Emil Lederer and Joseph Schumpeter on Economic Growth, Technology and Business Cycles

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Abstract This paper compares Joseph Schumpeter and Emil Lederer with respect to their visions concerning the notions of economic growth, technology and business cycles. Their theoretical investigations in a number of thematic areas seem to converge to similar views. More precisely, both Schumpeter and Lederer regard the capitalist economy as a dynamic system where the introduction of innovations is its distinctive characteristic. In such a system, static analysis based on the concept of equilibrium is useful as an expository device to describe the adjustment mechanisms of the economic system. They also paid attention to the emergence of large oligopolistic firms and considered this development as being interwoven with technological progress. Both economists used similar arguments to emphasize the link between economic development and technological change. In their analyses, Schumpeter and Lederer referred to psychological factors motivating the entrepreneur, in order to explain the forces that set in motion the process of innovation and thus economic development. The concept of technological unemployment is also described in a similar manner by both of them. Regarding the issue of business

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cycles, Schumpeter and Lederer considered them to be a result of endogenous processes within a capitalist economy. Lederer in his late works, argued in a way analogous to Schumpeter, that economic fluctuations are caused from the disruptions created by innovations, which are introduced discontinuously into the economic system. Conclusively, Schumpeter and Lederer delivered theses which are similar in scope and conclusions probably because they were developed in the same social, political, theoretical and ideological environment and were also well acquainted with each other's ideas.

Keywords Lederer · Schumpeter · Economic growth · Technology · Business cycles

Introduction

Joseph Alois Schumpeter "was one of the greatest economists of all time" (Haberler 1950, 1) who had a major impact on the development of *economics* as a science in the twentieth century. Some economists placed Schumpeter at the top of economic thought (e.g. Scitovsky 1980, 1). Others, for instance Kessler (1961, 334) argued that Schumpeter and Keynes were 'the only truly great economists' of the twentieth century. Morgenstern (1951, 203) claimed that Schumpeter 'belongs to that small top group where further ranking becomes almost impossible'. Meanwhile, Chandler (1962, 284) regarded Schumpeter as the theoretician with the best understanding of big business and the crucial role of innovation and entrepreneurship in economics. Finally, the writings of several important economists, such as Rosenberg (1982), Lazonick (1990), Scherer (1984), and Porter (1985) were also deeply influenced by Schumpeter's oeuvre.

In this context, it is nowadays becoming increasingly evident that Joseph Alois Schumpeter is among the most prominent theoreticians who will probably shape the thinking on economics for the next decades. Schumpeter's writings cover a broad range of topics such as the dynamics of economic evolution (e.g. *Theory of Economic Development*, 1912, and *Business Cycles*, 1939), the integration of economic, sociological and political perspectives with regard to capitalism (e.g. *Capitalism, Socialism and Democracy,* 1942) and, last but not least, the history of economic ideas (e.g. *Economic Doctrine and Method*, 1914, and *History of Economic Analysis*, 1954). It is interesting to note here that, by the time he was thirty-two, he had already written three significant books, twenty articles published in four countries, and over sixty book reviews.

However, some important aspects of Schumpeter's works and affinities with other great theoreticians remain unexplored. This paper attempts to provide a partial answer to this question, regarding the affinity of certain Schumpeterian elaborations with Lederer's works. In other words, we focus on Schumpeter's affinities with Emil Lederer, "the leading academic socialist of Germany in the 1920's" (Schumpeter 1954, 884), while two earlier articles have looked in detail at Schumpeter's affinities with the prominent Marxist theorist Rudolf Hilferding and the German Historical School, respectively (Michaelides and Milios 2004, 2005a, b, 2008).

Despite Schumpeter's early romantic dream of developing what he called an "exact economics" (McCraw 2007, 5), it is true that the basic differences between

Schumpeter and Lederer, on the one hand, and other great economists, on the other hand, go much deeper than plain and simple mathematical economic theorems. They saw a different economic reality and defined *economics* differently. Schumpeter and Lederer rejected the assumption that the "healthy" economy is one in (static) equilibrium. Both men argued that a modern economy is always in dynamic (dis) equilibrium. The economy they envisaged was not a closed system like e.g. Keynes's (macro)economy. It is forever changing and is rather open than closed, in nature. Of course, such an approach to economic reality is mostly ignored, in large part because it has proven too difficult to formalize, i.e. to fit into the maximization methodology that still dominates economics as a science (McCraw 2007, 500).

On the contrary, most classical economics considered innovation to be an "exogenous factor" like earthquakes, which have profound influence on the economy as a whole but are not part of *economics* as a science. However, Schumpeter argued that *innovation* is the very essence of economics which led to his famous perception of the innovator as *the* subject of economics and social evolution. Conclusively, Schumpeter and Lederer were students of great personalities of the Austrian camp at a time when Vienna was a 'melting pot' of nationalities and the capital of economic theory, but their works started out and proceeded with the assumption that the central problem of economics is *not* equilibrium but change.

In this framework, there are two main reasons why studying the potential relationship between them is of great interest. First, given that Schumpeter ranks among the "most important and enduringly influential economists of all time" (Hodgson 2007, 2) who had a major impact on the development of economics, our study is an important key for better understanding his economic writings. Second, understanding the origins of these important ideas in economics helps clarifying several issues with regard to the formation of the evolutionary approach.

The paper is structured as follows: section "Brief Biographical Notes: Joseph Schumpeter and Emil Lederer" offers a brief biographical presentation of the two economists' life and work; section "Economic Growth" explores their respective theses on economic change; section "Technology" investigates the role of technology in their writings; section "Business Cycles" presents their views on business cycles; finally, section "Conclusion" concludes the paper.

Brief Biographical Notes: Joseph Schumpeter and Emil Lederer

Joseph Alois Schumpeter (1883–1950), was born in the Austrian part of Moravia (then the Hapsburg Empire) and died in Taconic, Connecticut. He was educated at the Theresianum, a deeply aristocratic school where "Schumpeter never felt that he quite belonged" (McCraw 2007, 18). In 1901 Schumpeter enrolled in the faculty of law at the University of Vienna, and continued his studies in Berlin and London. He studied economics under Friedrich von Wieser, Eugen von Philippovich and Eugen von Böhm-Bawerk. In 1905 he took part in Böhm-Bawerk's seminar on Marx's theory. In 1906, he took the degree *Doctor utriusque iuris.* In 1909 Schumpeter became an Assistant Professor at the University of Czernowitz (Kirsch 1979, 143). Between 1911 and 1919 he taught Political Economy as a Full Professor in Graz, while in 1913 and in 1914 he was an Exchange Professor at Columbia University. In

1918, Schumpeter became member of the *German Socialisation Commission* (*Sozialisierungskommission*), and in 1919 he was appointed Minister of Finance in the government formed by the Social Democrats (Haberler 1950, 346). In 1921 he became president of *Biederman Bank* in Vienna, and in 1924 after the great inflation in Germany, he accepted a professorship at the University of Bonn in Germany in 1925. In the summer of 1926, Schumpeter lost his beloved mother, his (second) wedded wife, and his new born son.[1] From 1932 until his death in 1950 at the peak of his fame he taught at Harvard University and he served as president of the American Economic Association.[2]

Emil Lederer was born in Pilsen (Bohemia) in 1882 and died in New York. Just like Schumpeter, Lederer studied law and economics at the University of Vienna. Among others, his professors were Carl Menger, Friedrich von Wieser, Eugen von Böhm-Bawerk and Eugen von Philippovich, while Ludwig von Mises, Otto Bauer, Joseph Schumpeter and Rudolf Hilferding were among his friends or classmates. In 1901 he enrolled in the faculty of law at the University of Vienna and took his doctoral degree in law in 1905 (*Dr. iur.*) In 1911, Lederer was promoted to *Dr. rer. pol.* at Ludwig Maximilians University of Munich. A year later, he habilitated at the University of Heidelberg. In 1918, he was appointed Assistant Professor at Heidelberg University, but remained in Austria until 1920. Lederer was active in Social Democratic circles in Austria and Germany. In 1919, he was appointed member of the *German Socialisation Commission*, along with Hilferding and his old classmate, Joseph Schumpeter. At Heidelberg University, Lederer became full professor in 1920. From 1923 to 1925 he held lectures at the Tokyo Imperial University (Hagemann 2004). From 1922 until 1933, Lederer was editor, with Schumpeter and Alfred Weber of the *Archiv für Sozialwissenschaft und Sozialpolitik*[3]. In 1931, he succeeded Werner Sombart at the *German Faculty for National Economy and Financial Sciences* at Humboldt University of Berlin. In 1933 the Nazis forced Lederer to immigrate[4]. First, he went to Japan and then to the USA where he co-founded in 1933 the *University in Exile* at The New School for Social Research in New York City under Alvin Johnson's leadership (Johnson 2000), which would become the Graduate Faculty of Political and Social Science. Emil Lederer was its first dean until his sudden death in 1939.

[1] McCraw (2007, 345), by making full use of Schumpeter's diaries, argued that Schumpeter's prodigious output was due to his "isolation and self-doubt", which was later enhanced by the death of his beloved ones that made him use academic work "as a means of harnessing his personal grief" (*ibid,* 160). This attitude of his certainly was not evident in his public manner.

[2] At this point it is interesting to note that despite the fact that he was world famous by that time, he was also penniless. As McCraw (2007, 4) emphatically stressed, Schumpeter had to make paid speeches in order to be able to buy his transatlantic ticket.

[3] This journal published path-breaking articles such as Weber's "The Protestant ethic and the 'spirit' of capitalism" (1905) and Kondratieff's "The Long Waves in Economic Life" (1926). See Hagemann (2005).

[4] For Lederer's attempt to sociologically understand the main features of war, especially World War I, see Lederer (2006).

Economic Growth

In the first Japanese edition of his *Theory of Economic Development* Schumpeter noted that his purpose had been to create "a theoretic model of the process of economic change in time [...] to answer the question how the economic system generates the force which incessantly transforms it" (Clemence 1951, 158–159). Schumpeter started this book with a treatise of circular flow which, excluding any innovative activities, leads to a stationary state. The stationary state is, described by Walrasian equilibrium taking account of the interdependences of economic variables but applicable only to a stationary process, i.e. one which adapted itself to forces acting on it.[5]

Schumpeter described this equilibrium as "stationary flow" (Schumpeter 1912, ch. 1) characterized by the absence of any change. He made clear that this "stationary flow" is only a theoretical abstraction and serves as a reference point (Schumpeter 1928). Yet, while Schumpeter was a great admirer of Walras' scientific method and technique, he apparently believed that this vision of the economy was incomplete in that there should be a source of movement within the economic system.

Schumpeter defined economic development as "such changes in economic life as are not forced upon it from without but arise by its own initiative, from within" (Schumpeter 1912, 63). It was a phenomenon foreign to what might be observed in the circular flow or in the tendency towards equilibrium (*ibid*, 64). It involved spontaneous and discontinuous change in the channels of flow, disturbance of equilibrium, which forever altered and displaced the equilibrium state previously existing.

According to Schumpeter, economic development is accompanied by growth; however quantitative growth does not constitute development *per se*. He wrote: "[W]hat we are about to consider is that kind of change arising from […] the system which so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. Add successively as many coaches as you please, you will never get a railway thereby" (Schumpeter 1912, 64). Real economic growth and development depend primarily upon productivity increases based on innovation. More precisely, for Schumpeter this concept covered the following cases: "1. The introduction of a new good […] or a new quality of a good. 2. The introduction of a new method of production […]. 3. The opening of a new market […]. 4. The conquest of a new source of supply […]. 5. The carrying out of the new organisation of any industry" (Schumpeter 1912, 66).

The hero of his story was the entrepreneur[6]. What made these individuals look so special was the fact that they had the ability to exploit the new possibilities offered by the surrounding environment (Schumpeter 1912, 79–80). Schumpeter clearly distinguished this process from growth due to the gradual increase in population and capital. He wrote: "The slow and continuous increase in time of the national supply

[5] In his *History of Economic Analysis* he wrote: "[S]o far as pure theory is concerned Walras is in my opinion the greatest of all economists" and suggested that Walras's work "will stand comparison with the achievements of theoretical physics" (Schumpeter 1954, 827).

[6] According to Shionoya (1997, 38), for Schumpeter the essential feature is the type of man which is defined as a "leader", who overthrows the existing order by creating a new direction.

of productive means and of savings is obviously an important factor in explaining the course of economic history through centuries, but it is completely overshadowed by the fact that development consists primarily in employing existing resources in a different way, in doing new things with them, irrespective of whether those resources increase or not" (Schumpeter 1942, 65).

In practice, economic systems do not achieve equilibrium. They just move into "neighborhoods of equilibrium […] in which the system approaches a state which would, if reached, fulfil equilibrium conditions" (Schumpeter 1939, 45). In fact, in his *Business Cycles* Schumpeter (1939, 106) emphasized that major innovations are introduced around the neighborhood of equilibrium given that conditions are ideal.

As regard the market structure favoring economic evolution, Schumpeter believed that perfect competition is not favorable, for two reasons: (a) it cannot lead to high profitability and thus it cannot create real incentives for innovation; (b) it cannot create incentives for the capitalist and the enterprise to undertake risky and uncertain projects, because it is unable to guarantee, as a reward, an *extra profit*. More precisely, by incorporating new technologies, new types of organization innovations create surpluses of revenues over costs. Competition, however, tends to eliminate these extra revenues, but the "spread of monopolist structures" and the ability of big enterprises to promote innovation constantly recreates them (Schumpeter 1942, 81 ff.).

In *Theory of Economic Development*, the predominant role of large oligopolistic firms in technical innovation was acknowledged: "And if the competitive economy is broken up by the growth of great combines, as it is increasingly the case today in all countries, then this must become more and more true of real life, and the carrying out of new combinations must become in ever greater measure the internal concern of one and the same economic body. The difference so made is great enough to serve as the watershed between two epochs in the social history of capitalism" (Schumpeter 1912, 67).

Lederer's approach is very close to Schumpeter's conception. For Lederer, economic development constitutes: "the opening up of new markets, the manufacture of new products, and improved methods of production in the broadest sense of the term" (Lederer 1938, 230). Lederer's vision seems to converge significantly with that of Schumpeter. He considers the concept of equilibrium insufficient to analyze properly an economic system. He notes that for it to have any meaning we must fix the data and "the inherent or observed tendencies towards change would have to be ignored." According to him "the idea of economic equilibrium can be effectively applied under a static system, but such a system is based on assumptions that remove it from most of the problems that have to be dealt with in actual practice" (*ibid*, 78). However, the examination of a static system is not worthless because in the short-term, when most of the dynamic factors can be considered as being fixed, it is not devoid of explanatory power. In his own words: "Perhaps a theory of a stationary system is necessary in its general outline as the basis for any dynamic scheme-but this requires a theory of its own, and cannot be fertilized by further refinements of abstract and pure theory" (Lederer 1936, 159).

Lederer advocated the definition of the static system in the narrowest sense because "the static system must serve as a basis for comparison" and "the accidental inclusion of one or more elements of the dynamic system creates confusion in which it is difficult to distinguish the essentials of a static system and the consequences of disturbances from the outside" (Lederer 1938, 86). The same principle was followed

by Schumpeter in the exposition of his *Business Cycles* where he used the concept of a static equilibrium defined in the narrowest sense, in order to explain the mechanism which sets the system into motion from a state of immobility.

Lederer used the insights that a static system can offer to prove the existence of permanent unemployment that may ensue even in an actual dynamic system "if there are structural obstacles to any rapid change in quantitative ratios or in prices in the dynamic system" (*ibid*, 81). For Lederer the utilization of all factors of production is not a justifiable proposition even for a static system. The full utilization would presuppose the destruction or neglect of all surplus factors that exist in a system. Lederer noted that the optimistic view which delineates the static equilibrium as a state characterized by the absence of idle factors "comes from the attitude of the laissez faire school, which invested the economic system with a harmony that is entirely unjustified within the dry and precise framework of the static system" (*ibid*, 81).

In practice, however, it is necessary to "consider a longer period, with the changes that may normally be expected to occur within it. In that case the concept of static equilibrium has no meaning. That is why the concept of moving equilibrium was developed in its place" (*ibid*, 91) and "this moving equilibrium means a system of 'disturbances'" (*ibid*, 91) the combination of which produces a dynamic system where any regressive movements, which might occur, do not preclude further progress.

Lederer explicitly earmarked technical development as the distinguishing characteristic of a real dynamic system compared to a static or a harmonious dynamic system: "the most important factor in the dynamic process […] is technical development" (*ibid*, 89). And he made clear that technical progress should be excluded in order to define his own stationary state: "The combination of (a) [psychological factors] and (b) [growing population] without technical progress would make it possible to have a uniformly developing dynamic system without cyclical fluctuations—that is, a system in which population, plant, and production would increase uniformly from year to year" (*ibid*, 88).

He added: "Here again therefore we must use the method of isolation and try to study the effects of technical progress in an atmosphere of economic calm. We cannot indeed make pure statics our starting point, but must assume a steadily progressive economy in which no disturbances take place and which may be said to be in a state of "dynamic equilibrium" or growth. In accordance with this concept, we must also assume that our system is organized to ensure a uniform expansion of the process of production (e.g. by 1% yearly), accompanied by a parallel increase in the number of workers employed" (*ibid*, 162).

His view was, in general terms, consistent with the Schumpeterian approach of "moving equilibrium". Of course, he noted that it "might lead to confusion, because what actually happened was a disturbance of equilibrium in the ordinary sense of that term" (*ibid*, 91). In order to make things clear he added: "It is quite true to say that dynamic development can be adequately understood only if its essential feature is taken as being not a tendency to equilibrium but a series of impulses constantly driving it beyond the point it has reached. In this movement the tendency towards equilibrium exists only as an undercurrent" (*ibid*, 91–92). Conclusively, he argued that the concept of moving equilibrium is not very satisfactory because "movement is such an important feature of the system that the idea of equilibrium would have to take on an entirely new aspect" (*ibid*, 92).

The emergence of monopolies and cartels occupy an important role in Lederer's work. In his *Technical Progress and Unemployment* Lederer used numerical examples on the adoption of a new cost-reducing technique by a small number of firms within a branch of industry. He concluded that these firms would quickly obtain excessive profits and would dominate the market. Lederer conceived the relation of technical progress and monopolies in a way similar to Schumpeter: "[O]wing to its command and knowledge of the market and its power of deciding freely and with full knowledge of the circumstances on the technique to be adopted, a monopoly will be better able to transfer its operations to a lower level of costs and prices than one operating under free competition. Even assuming that under free competition too firms can react immediately to every opportunity of reducing their costs, monopoly undertakings are still more likely to make a change when it involves heavy investment (and therefore a greater need for capital) and a very large expansion of output, as in the case of mass production" (*ibid*, 133)[7]. Lederer also, stressed the tendency for cartelization and monopolization of the market and considered this market structure to have destabilizing effects, due to the rigidity they introduce to the price system thus prolonging the depression period (see further Allgoewer 2003, 333 ff.).

Technology

Schumpeter's work is "a comment, from constantly varying viewpoints, on a single affirmation: every aspect of social life is continually being transformed under capitalism" (de Vecchi 1995, 3). The emphasis on change is also present in Lederer's work. In this section the conception of the two theoreticians regarding the role of technology on the evolution of the economic system will be discussed.

For Schumpeter economic development is mostly the result of innovation, i.e. "the outstanding fact in the economic history of capitalist society" (Schumpeter 1939, 61). For him, innovation is the leading force in what he calls "evolution". Economic evolution is however discontinuous because of a discontinuity in the introduction of major innovations into the economic system. However, Schumpeter's concept of innovation was different than what is generally assumed because he stressed that innovation *per se* is not a force in economic development. Rather, the real force in economic development is the *consequences* of these innovations (Schumpeter 1928).

These consequences make innovations a force in the economic system and innovations which do not produce these consequences cannot be a force in the economic evolution of a social formation. As we know, in the Schumpeterian agenda evolution begins when an exceptional entrepreneur introduces an innovation. Actually, innovations produce qualitative changes in the system: "[The] historic and irreversible changes in the way of doing things we call "innovation" and we define: innovations are changes in production functions which cannot be decomposed into infinitesimal steps. […] The kind of wave-like movement, which we call

[7] For a discussion of the central importance of trust in a market economy, the unstable nature of market economies and the so-called "corporatist" approach see Perelman (1998, 1994, 2006).

the business cycle, is incident to industrial change and would be impossible in an economic world displaying nothing except unchanging repetition of the productive and consumptive process" (Schumpeter 1935, 4).

Lederer emphasized technical development as the distinguishing characteristic of the economic system (see e.g. Lederer 1931, 1933, 1–26). Technical change was so important to Lederer because, compared to other causes of change, technical development brings about sudden change which cannot be absorbed with readjustments and adaptation in a harmonious process, just like in the Schumpeterian system (Lederer 1938, 89). Technical development is, thus, responsible for "the extensive ups and downs in production that are typical of our modern capitalist process" (*ibid*, 90). See also Lederer (1931, 112).

Then, "[i]t is idle to consider technical development simply as non-economic phenomenon and therefore of relatively little importance, involving merely a change in data which cannot change the nature of economic process" (*ibid*, 90). A little later, in a Schumpeterian spirit, he added that: "technical progress […] is therefore a real factor which alone could have moulded the course of modern economic development along the lines in which we know it" (*ibid*, 90).

Lederer looked behind the crucial role of innovations to detect the very motive of economic acts inducing economic evolution. According to him, a possible motive is the "[d]ynamic psychology on the part of individual economic subjects. Persons who are not satisfied with the beaten track strike out along new lines when they see a prospect of profit. This dynamic attitude may be deduced from the economic principle that man [is] always endeavouring to better his situation" (*ibid*, 86).

Lederer followed Schumpeter and the entrepreneur was the hero: "This particular kind of initiative is restricted to the entrepreneur type. The desire for advancement which people who are not entrepreneurs also experience induces them to save.[…] Saving, however, only pays the people who perform this function in so far as the entrepreneurs invest and they themselves are willing to hand over their savings to the entrepreneurs for this purpose" (*ibid*, 86).

Regarding the relation between technological change and unemployment, the views of both Schumpeter and Lederer converge. Schumpeter considered technological unemployment as an inevitable side-effect of evolution based on innovative activity. Schumpeter gave a broad definition to the term "technological unemployment" analogous to the definition of "innovation": "[F]or the special case of unemployment arising from disturbance by innovation within the system we will set up a distinct class, to be called *Technological Unemployment*. This term […] has always been intended to cover displacement of workmen by machinery. We make it cover a much wider range and include not only the effects on employment of every kind of change in industry and commerce—organizational change, for instance—but also the effects which changes have on employment in firms or industries that are competed with by the firms of industries that introduce new production functions" (Schumpeter 1939, Vol 2, 514, emphasis added).

Schumpeter defined cyclical unemployment as the "total by which unemployment varies in the course of cycles" (*ibid*, 515) and then noted that "cyclical unemployment *is* technological unemployment". The emergence of dislocations is explicitly connected to the readjustments that take place during the cyclical process: "Technological unemployment […] linking up as it does with innovation is cyclical

by nature. [P]eriods of prolonged supernormal unemployment coincide with the periods in which the results of innovations are spreading over the system and in which reaction to them by the system is dominating the business situation" (*ibid*, 515).

This kind of unemployment may be called "frictional" since the "instantaneous adaptation of the system would kill it at birth". Despite this, he did not deny "the importance of the phenomenon or the sufferings it inflicts" but conclusively noted that "the primary long-run interest of the working class is in the effects of innovation on the total real wage bill and not in the incident variation of employment, which is but an element of the mechanism that produces the changes of the former and can be separately handled by public policy" (*ibid*, 515–516). Clearly, Schumpeter did not believe that the equilibrating forces of the free market can secure automatically the re-absorption of the displaced workers, however he saw in innovation a disruptive force, but with a positive net result in the long-run.

Lederer is also clear about the existence of technological unemployment, induced by the introduction of labor-saving techniques and in *Technical Progress and Unemployment* made a detailed examination of this phenomenon.[8] In the first place, he raised an objection against claims that automatic adjustment is ensured by the market mechanism. According to his argument there is a contradiction in the contention that technical progress does not alter the demand for labor due to increased profits or reduced costs which will both bring about new investments and expansion of production on the one hand, and the allegation that "labour-saving technical improvements by which workers are displaced diminish the marginal productivity of labour and thus necessitate a reduction of wages" (Lederer 1938, 9) which characterizes the argumentation of *laissez faire* school. His criticism to that line of thought rests also upon the social effects of labor displacement: "[E]conomists often admit that technical progress may involve dislocation, although their logical arguments point to the opposite direction. They explain this by saying that the dislocation is only temporary. But is this a valid argument? Human life itself is also temporary, and in matters of economics, interest will accordingly always be centered in changes which are of vital importance to any one generation, even if they will ultimately be assimilated to the general process" (*ibid*, 147). The only important question, therefore, is if medium-term unemployment can be attributed, partly, to technological progress (see also Diebolt 2006, 6–7).

Initially, Lederer rejected the "compensation theory" which was based on the arguments that on the one hand the displaced workers would be absorbed by the industries producing the same machines that are responsible for their unemployment and on the other technical progress does not reduce total purchasing power and thus the demand for labor cannot be diminished. With regard to the first argument Lederer noted that it is practically irrelevant because it would presuppose "an accelerating expansion of capital accumulation and investment" which is only possible for short term periods and with the aid of external factors like "export to other economic territories" (*ibid*, 149). As far as the second statement is concerned, Lederer argued that there is no connection essentially between the preservation of

[8] Lederer noted that "the low wages are due to the oversupply of workers, and as a result of mechanization and improving efficiency they are not likely to find employment easily" (Lederer and Lederer-Seidler 1938, p. 255)

the total purchasing power and the sustention of the demand for labor in the same level. In fact, demand for labor could decrease (*ibid*, 151).

Overall, his analysis pointed to the absence of automatic compensation mechanisms and he finally came to the conclusion that the introduction of labor-saving techniques "set(s) in motion a lengthy process of adjustment, and it is not until the final stages of this process are reached that the unemployment can be reabsorbed" (*ibid*, 218)[9]. Allgoewer (2003, 343) summarizes Lederer's conclusion as follows: "labor-saving technical change has grave effects in a market economy. A smooth and fast reintegration of workers as suggested by traditional economic analysis is unlikely. Instead, the absorption will be a long drawn-out process despite wage and price adjustments".

Conclusively, there is a common tendency to Schumpeter and Lederer to regard innovation as a determining factor of the evolutionary process of the economic system. Schumpeter's and Lederer's visions are very similar with respect to the subjective motives that are responsible for the introduction of innovations. They also agree on their disruptive character and more specifically on the effects that the introduction of innovation is bound to have on the labor market.

Business Cycles

Business Cycles can be regarded as an inflection point in Schumpeter's intellectual life, in the sense that it was the last time Schumpeter attempted to join economic history and economic theory. In fact, it signified the turning point "in Schumpeter's decades-long intellectual wrestling match with himself" (McCraw 2007, 271). In this context, the two thinkers' views on the nature of business cycles and economic fluctuations converge considerably. The typical interpretation of Schumpeter's analysis is that long waves are *caused* by the clustering of innovations. However, it would be more precise to say that according to Schumpeter the clustering of innovations is *not* the cause of long waves per se. Instead, long waves are due to the consequences of this clustering.[10] Schumpeter conceptualized long waves as disturbances in the equilibrium and a return to a new equilibrium point which gives the process its cyclical character.[11] All economic systems have an esoteric tendency towards equilibrium and move toward these "neighborhoods" after the disruptions have exhausted themselves. The most important characteristic of these "neighborhoods" is that conditions are stable (Schumpeter 1912, 214).

Economic development begins when an entrepreneur introduces an innovation, which enables the enterprise to earn an extra (monopolistic) profit and stimulates the

[9] Here Mongiovi (2005) rightfully stressed that one of Lederer's main criticisms on Keynes' *General Theory* was exactly Keynes's neglect of the phenomenon of technological unemployment.

[10] Here Schumpeter refers to: (1) the construction of new plants and the rebuilding of old plants, (2) new firms which are founded for the purpose of capitalising on specific innovations, and (3) the rise to leadership of new men (Schumpeter 1939, 68–71).

[11] According to Schumpeter, economic systems do not achieve equilibrium but move into "neighborhoods of equilibrium […] in which the system approaches a state which would, if reached, fulfill equilibrium conditions" (Schumpeter 1939, 45).

demand for credit in order to finance new investments. The "swarming of entrepreneurs" is financed through credit creation. Credit permits these firms to "bid away" inputs from non-innovating firms. In turn, this produces a rise in prices and a general expansion characterizing the first phase (i.e. prosperity) of Schumpeter's approach.

Prosperity may reach its upper point for various reasons. For instance, non-innovating firms, which are unable to compete with new firms, suffer losses and new investments are limited. Hence, the possibilities offered by the innovations are exhausted. The subsequent downturn coincides with the second phase (i.e. recession) of the Schumpeterian model. The decline continues because of "errors, excess of optimism […]. Reckless, fraudulent and otherwise unsuccessful enterprises created in the optimism of expansion cannot stand the test administered by Recession" (Schumpeter 1939, 122). They are liquidated and these liquidations cause a "panic" which also results in credit tightening. Because of this situation, firms which are not able to sustain the pressure are liquidated and there is "a shrinkage of operations that reduces them, quite erratically, below their equilibrium levels" (*ibid*, 125). This marks the third phase (i.e. depression) of the Schumpeterian cycle. Depression continues until all investments are liquidated. Once this point is reached, a movement towards a new "neighborhood of equilibrium" marks the fourth phase of the Schumpeterian model (i.e. revival).

Schumpeter emphatically stressed certain actors in his theory of economic fluctuations. He wrote: "Social facts are the result of human conduct, economic facts result from economic conduct and the latter may be defined as conduct directed towards the acquisition of goods […]. The field of economic facts is *first of all* delimited by economic conduct" (Schumpeter 1912, 3–4). After all: "instability may arise from particular influences from without, which cannot properly be charged to the economic system at all" (Schumpeter 1928, 362)[12]. Hence, any acceptable explanation must link economic conduct to motives (Schumpeter 1912, 10). Thus, the cause of long waves lies at the level of *what drives* entrepreneur to innovate. However, entrepreneurs may innovate for reasons of ambition, greed, hate, etc. but these reasons remain, practically, unknown. In his *own words*: "Economic conduct may have *any* motive" (Schumpeter 1939, 10, emphasis added)[13].

An attempt was made by Lederer to provide a theoretical explanation of the business cycle, an issue which he regarded as being of great importance: "We can say without exaggeration that the bulk of modern theory is business-cycle theory" (Lederer 1936, 157). Lederer's central vision of business cycles, as an endogenous phenomenon inseparably linked with the growth process of a capitalist society, remains unchanged in all his works. However, certain aspects of Lederer's conceptualization of business cycles underwent modifications when his 1925 article *Konjunktur und Krisen* is compared with his 1938 book *Technical Progress and Unemployment* the differences are discernible. Lederer's conception of the business cycle in *Technical Progress and*

[12] For a discussion on entrepreneur's motives and personality in Schumpeter's works see de Vecchi (1995, 16–19).

[13] As is well known, in the subsequent editions of his *Theory of Economic Development*, Schumpeter omitted the seventh chapter and rewrote the second chapter. It is argued (e.g. Shionoya 1997, 167–71) that these changes signify important shifts regarding the role of the entrepreneur.

Unemployment (1938) is, apparently, very "Schumpeterian". The initiation of a boom is explained by supply-side factors, and more specifically by technical change. Technical change is decomposed into two types, which have entirely different effects, namely "rationalization" and "inventions'.

The term "inventions" was used by Lederer to describe "technical innovations as led to the production of goods which enlarge the scale of needs" (Lederer 1938, 7) and create "hitherto unknown 'genuine' or 'social' needs" (Lederer 1938, 24). The new firms, which adopt inventions compel "old" firms to react to the new situation or become obsolete: "most of these commodities have a double character: they lead on the one hand to the realization of new necessities and lead so far to an expansion of the total production, but in most cases they compete with other branches of production too" (Lederer 1938, 23). The introduction of inventions leads to a general expansion of the economic system: "inventions lead to an expansion of the whole system of production and a parallel increase in the total purchasing power of the community, through the creation of money or a rise in the velocity of circulation. These effects cannot be regarded as disturbances but must be recognized as one of the fundamental forms of the growth of the industrial system" (Lederer 1938, 135). Lederer's analysis of the booming period after the introduction of inventions does not mention the possibility of a depression phase following it.

Rationalization is the second type of technological change responsible for the appearance of fluctuations. In Lederer's work it is a general concept covering every cost-saving process (either capital-saving or labor-saving) related to increased efficiency in organization. In contrast to the application of inventions, rationalization and especially labor-saving technical improvements do not ensure unhindered growth and can have serious social repercussions. The boom period signaled by the application of technical progress "creates a new initial situation enabling employment capacity to be enlarged by a fresh combination of capital and labor, which can be financed by recourse to extra short and long-term credit" (Lederer 1938, 233–4).

As we have already noted, for Lederer credit expansion was a necessary complement to the new undertakings in a way analogous to the Schumpeterian description of the process. He even stressed the importance of credit creation in explaining business cycles by emphatically arguing that: "The discussions of the last 15 years, however, have led to the general conviction that no cyclical development can be explained or described without taking account of the monetary aspect, additional credit providing the fuel without which any dynamic power would spend itself very quickly" (Lederer 1936, 156).

However, when the initial wave of expansion, caused by rationalization, new investments and credit creation, has subsided, and firms are forced to repay the loans from their profits, depression will set in, resulting in unemployment: "the decline in employment in the mechanized industries, which was concealed by the general increase in employment and activity while the boom lasted, will begin to make itself generally felt" (Lederer 1938, 244). His analysis is mainly focused on the prospects of re-absorption of the displaced workers that rationalization has produced and so he does not provide a detailed theoretical description of the depression phase.

Regarding the prospects of a revival that are reinforced through the course of the depression phase, Lederer explicitly mentioned the possibilities of a new phase of expansion that are created during phases of depression in the monetary

sphere: "Every depression […] will, owing to the severe shrinkage of production, renew the possibilities of monetary expansion; the total circulation of money diminishes, the velocity of circulation is retarded, and reserves increase. This means that side by side with the displacement of the factors of capital and labour from production, fresh opportunities arise of expanding production through credit" (*ibid*, 227).

Lederer shared some common insights with Schumpeter. One theme they have in common was the role that unsound credit plays in the causation of a depression phase. Lederer warned that there are dangers inherent in the process of credit expansion which takes place in the prosperity phase. As was already mentioned, the function of credit expansion is the financing of new investments especially during boom periods. The initial credit expansion will be spent on working capital but in the long-run the need will arise for additional fixed capital. This need will manifest itself first of all as increasing demand for working capital in the capital goods industries and later on as an investment demand both in the consumption goods and in the capital good industries. The danger inherent in this sequence of events was, according to Lederer, the inability to consolidate the provoked credit expansion from the savings (profits): "It is true that every expansion of production implies a possible increase in the volume of savings, but dangerous stresses may arise if the reserves of idle savings are small and if business credit is expanded to an extent exceeding the rise in savings which may be expected as a result of the boom, an eventuality which is all too probable, because modern systems of payments permit of a rapid increase in the supply of money and therefore in business credits" (*ibid*, 230–1).

The process described here parallels with the phase of depression in Schumpeter's schema which is characterized by unsound credit and ill-founded undertakings (Schumpeter 1928). Both writers attributed this state to the uncertainty which prevails during booms and may lead to erroneous expectations.

Another obvious similarity exists in the abstract model that both Lederer and Schumpeter used to describe the onset of the boom period. They both conceptualized a stationary economy without savings and unused reserves. As it has been mentioned earlier, the impulse which sets the system in motion is the application of innovations. Both writers in their exposition of their respective model made the simplifying assumption that these innovations will be implemented by the setting up of new enterprises and the building of new plants. The new enterprises demand the creation of new credit in order to finance their plans. Due to the assumptions concerning the initial state, the materialization of their business plans forces them to exercise a demand for producer's goods and labor force. Prices of producer's goods and wages rise up (wages will rise at a slower rate) and a shift of demand from consumer's to producer's goods will be observed leading simultaneously to an increase in the price of consumer's goods (Diebolt 2006, 10). Differential profits will be earned in the course of the prosperity period (Schumpeter 1939, Vol. 1, 130–8; Lederer 1938, 236–8).

Lederer's analysis of the business cycle in 1938 was differentiated from that of his earlier work. In his first attempt, in *Konjunktur und Krisen* (1925), Lederer had constructed an explanation consistent with the so-called "disproportionality theory" introduced by Tugan–Baranowsky and later adopted by Hilferding and others (see Milios et al. 2002, 145–189). Lederer argued that: "Almost all the cycle theories

agree about the nature of these disturbances-they are disproportionalities" (1936, 156).[14]

The boom period starts due to an increase in effective demand, which is attributed to the social groups with fixed incomes such as public employees and rentiers. Credit creation follows as an essential component of this period. This phase is characterized by an increase in prices although this increase is disproportional in the various sectors of the economy: prices in the producer's goods sector will typically raise more compared to consumer's goods. In addition to this, the increase in wages will be also at lower rates compared to those of prices thus the real wages will decrease. The slower rate of increase in wages is the explanation for the existence of *extra profits* during this phase of the cycle. A redistribution of income will take place from wage-earners to capitalists. The composition of demand will as a result, contain a greater part of demand for investment goods than demand for consumer goods (on the assumption that profits are invested and wages are spent on consumption). The general trend will therefore be a disproportional growth rate between the sectors of producer goods and consumer goods. This discrepancy will be revealed at the turning point of the cycle when it will become clear that the growth which took place in the producer goods sector is not matched by a corresponding growth in the demand for final goods[15].

The insufficiency of demand, which signals the initiation of the depression phase, will be felt, according to Lederer, most probably in heavy industries. However, it will spread through the whole of the economy and decreases in prices and profits will be observed. Wages will fall at a slower rate than prices and the explanation offered is that the contracts which determine them are less prone to change than prices. The redistribution of income will be reverse compared to the prosperity period. The real wages will rise in parallel with the increase in purchasing power of the fixed income group. The later social category is again considered to play a pivotal role in the revival of the economy. The relative stability of their incomes is a decisive factor in restoring the levels of effective demand and initiating a new prosperity period.

However, in Lederer's early explanation of the business cycle, it is not very clear what the ultimate cause of the boom period is. Allgoewer (2003, 331) described Lederer's vision of the business cycle as demand-driven and assigned the leading role to classes with fixed incomes, the purchasing power of which increases during the crisis phase. Allgoewer (2003) regarded credit as an essential precondition but not as the ultimate cause of the cycle. On the other hand, Moszkowska (1935) classified Lederer's analysis as a credit theory of the cycle. These conflicting views probably reflect Lederer's ambiguity on the issue (Moszkowska 1935, 69).[16]

[14] Disproportional developments in the producer and consumer goods sectors in the course of the business cycle constitute a common point between Lederer's 1925 analysis and Schumpeter's work on business cycles (Allgoewer 2003, 333). While Schumpeter acknowledged the importance of disproportionality ("[T]his idea […] is moreover easy to substantiate from certain very obvious facts" [Schumpeter 1954, 1133]) he avoided attributing a causative role to them. He stressed the importance of looking for "the definite factors that are to account for it" and concluded that "those factors and not disproportionality per se will individuate an author's theory" (*ibid*, 1133).

[15] For an insightful discussion of whether Lederer should be classified as an underconsumptionist see Allgoewer (2003, 342–3)

[16] According to Diebolt (2006, 4) the deeper roots of Lederer's views could be traced back even to Malthus (1836) and Sismondi (1827).

Conclusion

The present paper compared Joseph Schumpeter and Emil Lederer with respect to their visions concerning the notions of economic development, technology and business cycles. Their theoretical investigations in a great number of thematic areas were found to converge to similar views. More precisely, both Schumpeter and Lederer regarded the capitalist economy as a dynamic system where the introduction of innovations is its distinctive characteristic. In such a system a static analysis based on the concept of equilibrium is useful only as an expository device to describe the adjustment mechanisms of the economic system and it cannot capture the essence of the growth process. They also paid attention to the emergence of large oligopolistic firms and considered this development to be interwoven with technological progress.

Both economists used similar arguments to emphasize the link between economic development and technological change. In their analyses, Schumpeter and Lederer referred to psychological factors motivating the entrepreneur, in order to explain the forces that set in motion the process of innovation and thus economic development. The effects caused by the introduction of innovation in the labor market and the concept of technological unemployment are described in a similar manner by both of them.

Regarding the issue of business cycles, Schumpeter and Lederer considered them to be a result of endogenous processes within a capitalist economy. Lederer in his later works, argued in a way analogous to Schumpeter, that economic fluctuations are caused from the disruptions created by innovations, which are introduced discontinuously into the economic system. They both believed that in the capitalist system crises are inseparably linked with economic growth and that after each depression phase the new phase of the economy is characterized by a higher level of total social product.

As the available material demonstrates, Schumpeter and Lederer were born only a year apart. They both studied law and economics in Vienna's "techno-romantic" civilization (McCraw 2007, 3). They studied economics under Friedrich von Wieser, Eugen von Philippovich and Eugen von Böhm-Bawerk. Schumpeter and Lederer, were fellow students at the University of Vienna and later became friends. The two theoreticians' interaction must have continued in the years that followed, and in 1918 Schumpeter became a member of the *German Socialisation Commission* (*Sozialisierungskommission*), signing the report which pleaded for socialisation. One year later, in 1919, Lederer who was active in Social Democratic circles in Austria and Germany was appointed member of the same commission, along with his old classmate, Joseph Schumpeter. The two theoreticians' interaction continued in the years that followed given that Lederer was editor, with Joseph Schumpeter and Alfred Weber, of the *Archiv für Sozialwissenschaft und Sozialpolitik.* Meanwhile they both became university Professors around 1919–1920. In 1932–1933 they both immigrated to the USA, where they remained active until their sudden deaths.

We may, thus, conclude that both theoreticians developed certain of their theories in the same social, political, theoretical and ideological environment and were probably well acquainted with each other's ideas. We may suppose, therefore, that the similarities of certain Schumpeterian elaborations with theoretical theses and analyses delivered by Emil Lederer are not accidental, but could be attributed to the common socioeconomic environment, in which the two great thinkers lived and developed their theories.

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