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Abstract: The paper compares Joseph Schumpeter, Emil Lederer and Rudolf Hilferding with respect to their visions concerning economic development, technology, credit and business cycles. Their theoretical investigations, in a great number of thematic areas and concepts, seem to converge significantly. For instance, all three 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. Hilferding stressed the importance of technology but mostly with respect to market structure and, more specifically, the emergence of monopolies and cartels. The function of credit is another central theme in the works of all three theoreticians. Besides, they all comprehended in a similar manner the way that credit expansion infuses dynamism into the economic system, creating, thus, on the one hand new growth prospects, and on the other financial and economic instability. Also, regarding the issue of economic crises and fluctuations, all three economists considered them as an endogenous characteristic of the capitalist system and not simply as the result of external factors or shocks. Schumpeter and Lederer argued that business cycles arise from the disruptions created by innovations, which are introduced discontinuously into the economic system, whereas Hilferding focused on the role of disproportionality between sectors producing capital goods and those producing consumer goods. Conclusively, all three writers, in spite of their theoretical differences, have delivered theses which are similar in scope and conclusions.

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1. Introduction

There is no doubt that Joseph Alois Schumpeter "was one of the greatest economists of all time" (Haberler 1950, p. 1). Scitovski (1980, p. 1) places Schumpeter at the top of economic thought. Kessler (1961, p. 334) argues that, apart from Keynes, Schumpeter was "the only truly great economist" of the 20th century. Morgenstern (1951, p. 203) claims that he "belongs to that small top group where further ranking becomes almost impossible". Chandler (1962, p. 284) regards Schumpeter as the economist with the best understanding of the rise of big business and the crucial role of innovation and entrepreneurship. Also, the works of Rosenberg (1982), Lazonick (1990), Scherer (1984), and Porter (1985) are influenced by the Schumpeterian doctrine.

It is also true that there is a gap in economic literature concerning the interaction of Joseph Schumpeter with other great theoreticians, such as Emil Lederer, and Rudolf Hilferding, etc. With the exception of very few papers (see e.g. Michaelides and Milios 2004, 2005a, 2005b, 2007) no focused research seems to have been done on this important issue. There are two main reasons why studying the potential relationship between them is of great interest. First, because Schumpeter made an important contribution to economics and, second, it is an essential key for understanding Schumpeter's economic writings. Finally, understanding the origins of these ideas in evolutionary economics helps clarifying the contrasts between orthodox economics and the Schumpeterian approach.

The paper is structured as follows: section 2 offers a brief biographical presentation of the three economists' life and work; section 3 explores their respective theses on economic change; section 4 investigates the role of technology in their writings, section 5 discusses the role of credit; section 6 presents their views on economic fluctuations; section 7 concludes the paper.

2. Brief Biographical Notes

2.1 Joseph Schumpeter

Joseph Alois Schumpeter (1883-1950), the son of a cloth manufacturer, was born in Triesch in the Austrian part of Moravia, in what was then the Hapsburg Empire (now part of the Czech Republic) and died in Taconic, Connecticut. In 1901 Schumpeter enrolled in the faculty of law at the University of Vienna, and continued his studies in Berlin and London. He studied economic theory under Friedrich von Wieser, Eugen von Philippovich and Eugen von Böhm-Bawerk. In 1905 he took part in Böhm-Bawerk's seminar, where the latter's criticism of Marx was one of the topics of debate. A year later, in 1906, he took the degree *Doctor utriusque iuris.*

In 1909, thanks to Böhm-Bawerk (Kisch 1979, p. 143), Schumpeter became an Assistant Professor at the University of Czernowitz. 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 new government formed by the Social Democrats (Haberler 1950, p. 346). In 1921 he became president of a highly respected private banking house (*Biederman Bank*) in Vienna, and when the bank collapsed in 1924 after the great inflation in Germany, he returned to the academic world and in 1925 accepted a professorship at the University of Bonn in Germany. From 1932 until his death he taught at Harvard University, and he served as president of the American Economic Association, the first foreign-born economist to attain this distinction (Oser and Blanchfield 1975, p. 451).

Schumpeter's writings cover a broad range of topics including the dynamics of economic development, the feasibility of capitalism and the history of economic thought.

2.2 Rudolf Hilferding

Rudolf Hilferding (1877-1941) was born in Vienna into a "Jewish mercantile family" (Sweezy 1949, p. xv) and died in Paris. He studied medicine at the University of Vienna, where Joseph Schumpeter was also a student, and obtained his doctorate in 1901. However, he practiced medicine only until 1906 and thereafter devoted himself exclusively to politics and the study of economics. At the age of fifteen, he joined the socialist movement and from 1902 he contributed frequently to *Die Neue Zeit,* the theoretical journal of the German Social-Democratic Party (S.P.D.). Between 1904 and 1923 he published, along with Max Adler, the *Marx Studien*. In 1905, Hilferding participated in the Seminar on economic theory directed by Böhm-Bawerk. In 1906, he accepted an invitation from the S.P.D. and tutored for a year at the party school in Berlin, along with Rosa Luxembourg (Darity and Horn 1985, p. 363). Afterwards, he was appointed to editor of the party's newspaper, *Vorwärts*.

In 1914, Hilferding joined the Independent Social Democratic Party of Germany (U.S.P.D.), which emerged from a split with the S.P.D. In 1918, he became member of the *German Socialisation Commission* and in 1922, after the majority faction of the U.S.P.D. had been transformed to the German Communist Party (K.P.D.), he returned to the S.P.D. He became editor of the party's journal, *Die Gesellschaft* and served as Weimar's Minister of Finance, in 1923 and 1928-9. When Hitler came to power in 1933, Hilferding went into exile. He fled to Denmark in 1933, then stayed in Switzerland and in 1939 went to Paris. In 1941 he was handed over to the Nazis by the Vichy government and died in Paris either by suicide or from injuries inflicted by the Gestapo.

2.3 Emil Lederer

Emil Lederer was born in 1882 to a merchant family. He studied law and economics at Vienna University. 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.

Although educated at Vienna, Lederer is not regarded as a member of the Austrian School. Lederer could be considered as one of the last members of the "Austro-Marxists".[1] In 1905, Lederer was promoted to *Dr. iur.* in Vienna, and in 1911 *Dr. rer. pol.* at Ludwig Maximilians University of Munich. The next year, he habilitated at Ruprecht Karl 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 Committee*, along with Hilferding and his old Vienna classmate, Joseph Schumpeter.

At Heidelberg University, Lederer became full professor in 1920. From 1923 to 1925 he held lectures as guest professor at Tokyo Imperial University. From 1923 to 1931, Lederer and Alfred Weber were directors of the *Institute for Social and State Sciences*. In 1931, he succeeded Werner Sombart at the German Faculty for *National Economy and Financial Sciences* at Humboldt Univerisyt of Berlin.

As all "Heidelberger economists", in April 1933 Lederer was suspended by the Nazis. In addition, university members had denunciated Lederer for being a member of the Social Democratic Party of Germnay and for being "non-Aryan". Lederer emigrated to Japan, then to the USA were 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*.[2] Emil Lederer was its first dean until his sudden death in 1939, in the aftermath of an operation.[3]

[1] However, Lederer differed from them on several aspects. For example, an important point of difference was on the theory of crisis. Lederer argued that the concentration of capital was a destabilizing feature. More specifically, in his work on structural growth, he insisted on the importance of technological change as the source of unemployment and on the disproportionality relations between the economic sectors, putting him closer to Tugan-Baranowsky than the "underconsumptionist" Marxists (see also Milios 1994; Milios *et al.* 2002, Milios and Sotiropoulos 2005, 2007). His work also links him with the approach developed by the Kiel Institute.

[2] Most of the members of this circle wrote interesting essays on the so-called *new* middle class (i.e. white-collar workers). However, the so-called *old* middle class (i.e. artisans, farmers and other self-employed representatives of small business) was relatively neglected (see e.g. Lederer and Marschak 1926).

[3] In the United States, Lederer established a lasting collaboration with Marschak, a former pupil of Lederer's who had taught at the Universities of Heidelberg, Oxford and then in the United States (New School of Social Research). Then, he moved to the University of Chicago and became president of the American Economics Association.

Lederer was considered an important supporter of interdisciplinary social sciences in Heidelberg. He published the social democratic theory magazine *Die Neue Zeit*, he did not support an unregulated free market, he was critical to the inefficiencies caused by monopolies, and denounced the positive effects of technical progress.

We may conclude from this that all three thinkers developed certain of their theories in the same social, political, theoretical and ideological environment and that they seem to be well acquainted with each other's ideas. We may suppose, therefore, that the similarities of certain Schumpeterian elaborations with theoretical theses and analyses by Rudolf Hilferding and Emil Lederer are not accidental, but the outcome of this long acquaintance and interaction between the three Austrian economists.

3. Economic Development

Schumpeter started his *The Theory of Economic Development* with a treatise of circular flow which, excluding any innovative activities, leads to a stationary state. The stationary state is, according to him, described by (Walrasian) equilibrium. The hero of his story is, in fine Austrian way, the entrepreneur. Schumpeter describes this equilibrium as "the circular flow of economic life" or the "stationary flow" (Schumpeter 1912, ch.1). This state refers to simple reproduction and is characterized by the absence of any change. But Schumpeter makes clear that this "stationary flow" is only a theoretical abstraction and serves as a reference point (Schumpeter 1928).

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, p. 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, p. 66).

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 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, p. 65).

In practice, economic systems do not achieve equilibrium. They just move into what Schumpeter calls "neighborhoods of equilibrium...in which the system approaches a state which would, if reached, fulfil equilibrium conditions" (Schumpeter 1936, p. 45). In fact, in his *Business Cycles* Schumpeter (1939, p. 106) emphasized that major innovations, which initiate new expansions, are introduced around the neighbourhood of equilibrium because conditions are, in a sense, ideal. It is in this neighbourhood of equilibrium that economic conditions are stable and therefore possible to make reliable calculations. Consequently, uncertainties are at their lowest.

As regards the market structure favouring economic evolution, Schumpeter believed that perfect competition was not favourable, 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, etc., innovations create surpluses of revenues over costs. Competition, however, tends to eliminate these extra revenues (extra profits), but the "spread of monopolist structures" and the ability of big enterprises to promote innovation constantly recreates them (Schumpeter 1942, p. 81 ff.).

In fact, in his *Theory of Economic Development* (1912), 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 water-shed between two epochs in the social history of capitalism' (Schumpeter 1912, p. 67).

On the other hand, Lederer's conception of economic development is very close to Schumpeter's approach. In brief, 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, p. 230). Lederer's vision seems to converge significantly. He considers the concept of equilibrium insufficient to analyse 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" (Lederer 1938, p. 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 fixed, it is not devoid of explanatory power. In his own words: "Perhaps 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, p. 159).

Lederer advocates the definition of the static system in the narrowest sense (the growth of population and capital is assumed to be zero) 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, p. 86). The same methodological principle is followed by Schumpeter in the exposition of his *Business Cycles* where he uses 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 uses 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" (Lederer 1938, p. 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 notes 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" (Lederer 1938, p. 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" (Lederer 1938, p. 91) and "this moving equilibrium means a system of "disturbances" (Lederer 1938, p. 91) the combination of which produces a dynamic system where any regressive movements, which might occur, do not preclude further progress.

Just like Schumpeter, Lederer explicitly earmarks 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" (Lederer 1938, p. 89). And makes 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" (Lederer 1938, p. 88),

Later on Lederer adds: "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 per cent. yearly), accompanied by a parallel increase in the number of workers employed" (Lederer 1938, p. 162).

His view is, generally, consistent with the Schumpeterian approach of "moving equilibrium". Of course, he notes that it "might lead to confusion, because what actually happened was a disturbance of equilibrium in the ordinary sense of that term". In order to make things clear he adds: "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" (Lederer 1938, pp. 91-92). Conclusively, he argues 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" (p. 92).

The emergence of monopolies and cartels occupy an important role in Lederer's work. In his *Technical Progress and Unemployment* Lederer uses a numerical example of the adoption of a new cost-reducing technique by a small number of firms within a branch of industry. His conclusion is that these firms will quickly obtain excessive profits and will dominate the market. Lederer also, mentioned the tendency for cartelization and monopolization of the market and he considered this market structure to have destabilizing effects, due to the rigidity they introduce on the price system thus prolonging the depression period.

On the other hand, in *Finance Capital* (1910), the great Marxist theoretician Rudolf Hilferding introduced the notion of a "latest phase" of capitalism, characterized by : (a) the formation of monopolistic enterprises, which put aside competition; (b) the fusion of bank and industrial capital leading thus to the formation of finance capital, which was considered to be the ultimate form of capital; (c) the subordination of the state to monopolies and finance capital; and finally (d) the formation of a protectionist and expansionist policy.

Despite being a prominent Marxist thinker Hilferding did not attribute capitalism's doom to the tension between the progressive reduction of socially necessary labour time and the fact that labour power constituted the sole source of profit (Darity and Horn 1985). He foresaw a transformation of the capitalist economy with growing centralisation and concentration of capital as the normal outcome (see Michaelides and Milios, 2005). For Hilferding economic development depends on large non-competitive enterprises, whose technological superiority derives from their ability to attain profits high above the average. Just like Schumpeter, Hilferding believed that: "Cartelisation brings exceptionally large extra profits" (Hilferding 1910, p. 233) that function as incentives for undertaking such entrepreneurial acts, which, in turn, will lead to the further empowerment of the non-competitive, monopolistic formations.

According to Hilferding, the elimination of free competition and monopolies came, historically, in a similar way: "Finance capital signifies the unification of capital. The *previously separate* spheres of industrial, commercial and bank capital are brought under the common direction of high finance, in which the masters of industry and of the banks are united in a close personal association" and consequently: "The basis of this association is the *elimination of free competition among individual capitalists by the large monopolistic combines"* (Hilferding 1910, p. 301, emphasis added). Thus, "it is also clear that monopolistic combines will control the market" (Hilferding 1910, p. 193).

Hilferding repeatedly affirmed the position that the big corporation is able to create the conditions which may assure its market supremacy as well as its extra profits for a long period: "An industrial enterprise which enjoys technical and economic superiority can count upon dominating the market after a successful competitive struggle, can increase its sales, and after eliminating its competitors, rake in extra profits over a long period" (Hilferding 1910, p. 191).

As in Schumpeter's theory, the most important aspect of growth of corporations is the "liberation of the industrial capitalist from the function of industrial entrepreneur". This transformation has several consequences. One is the emergence of "promoter's profit" (Gruendergewinn), which arises from the possibility of selling shares in a joint stock company for considerably more than the capital invested in the enterprise, if the yield on that capital is higher than the current rate of interest on investment. Promoter's profit is an incentive to the formation of joint stock companies and a source of wealth which becomes available for further investment. In other words, it stimulates the centralisation of capital, the growth of large corporations and eventually the formation of cartels and trusts controlling whole industries.

Hilferding's analysis treated dividends and promoter's profit as distinct economic categories, and worked out the significance of the separation between ownership and the control of production, which allows a small number of people to acquire control over a large number of companies, and to establish personal connections which then facilitate the formation of cartels and trusts.

4. Technology and Innovation

As we have seen, for Schumpeter economic development is mostly the result of innovation, i.e. "the outstanding fact in the economic history of capitalist society" (Schumpeter 1939, p. 61). For him, innovation is the leading force in what he calls "economic evolution". Economic evolution is however discontinuous because of a discontinuity in the introduction of major innovations into the economic system.

While the importance of innovation in Schumpeter's thought is well known, less attention has been paid to what Schumpeter, practically, meant by innovation. It appears that Schumpeter's concept of innovation is different than is generally assumed. Schumpeter's concept of innovation is different because he stresses that innovation *per se*, i.e., simply as new ideas or new combinations, is not a force in economic development. Rather the true force in economic development is the *consequences* of these innovations (Schumpeter 1928).

These consequences make innovations a force in economic evolution and innovations which do not produce these consequences could not be a force in the economic development of a social formation. Economic evolution begins when an exceptional entrepreneur introduces an innovation. This enables him to make monopolistic profits and stimulates the borrowing of capital in order to increase the investment. This activity of the first entrepreneur smoothes the path for other entrepreneurs to introduce innovations. This "swarming of entrepreneurs" is financed through credit creation, i.e. "the monetary complement of innovation". Credit permits these firms to "bid away" factors of production from older non-innovating firms.

The innovations produce qualitative changes in the economic 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. Add as many mail coaches as you please, you can never get a railroad by so doing...The kind of wave-like movement, which we call 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, p. 4).

However, for Schumpeter, an adequate explanation of economic development is not simply explaining innovation, as the result of other *economic* factors. Instead, an adequate explanation consists in finding a causal relation (Schumpeter 1912, p. 5). In other words, innovations are not the cause of economic development. According to Schumpeter, causality is to be found at the level of motives. Motives are the adequate explanation of the causes of economic phenomena which link economic conduct to motives (Schumpeter 1912, p. 10). Thus, the real cause of development is to be found at the level of what motivates the entrepreneur to undertake innovation.

Just like Schumpeter, Lederer explicitly earmarks technical development as the distinguishing characteristic of an economic system. But why is technical change so important according to Lederer? Because, compared to other causes of change, technical development brings about sudden (and not gradual) considerable change which cannot be absorbed with readjustments and adaptation in a harmonious process, just like in the Schumpeterian system (Lederer 1938, p. 89). Technical development is, thus, responsible for "the extensive ups and downs in production that are typical of our modern capitalist process" (Lederer 1938, p. 90).

Continuously, he stressed the fact that "[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" (Lederer 1938, p. 90). A little later Lederer, in a Schumpeterian spirit, 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" (Lederer 1938, p. 90).

Lederer, just like Schumpeter, 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 always endeavouring to better his situation" (Lederer 1938, p. 86).

Lederer followed Schumpeter, in a fine Austrian fashion, and the entrepreneur is, for once again, 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" (Lederer 1938, p. 86).

Regarding the issue of the relation between technological change and unemployment, the views of both Schumpeter and Lederer converge. Schumpeter considers 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, p. 514, emphasis added).

Schumpeter goes on to define cyclical unemployment as the "total by which unemployment varies in the course of cycles" (Schumpeter 1939, Vol 2, p. 515) and then continues noting 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 is…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" (Schumpeter 1939, Vol. 2, p. 515).

According to him this kind of unemployment may be called "frictional" since the "instantaneous adaptation of the system would kill it at birth." Despite this, he does not deny "the importance of the phenomenon or the sufferings it inflicts" but conclusively he notes 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" (Schumpeter 1939, Vol 2, pp. 515-516). Clearly, Schumpeter does not believe that equilibrating forces of the free market can secure automatically the reabsorption of the displaced workers, however he sees 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 labour-saving techniques, and in *Technical Progress and Unemployment* made a detailed examination of this phenomenon. 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 labour 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, p. 9) which characterizes the argumentation of *laissez faire* school. His criticism of that line of thought rests also upon the social effects of the labour 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" (Lederer 1938, p. 147). The only important question, therefore, is if medium-term (i.e. 5-20 years) unemployment can be attributed, partly, to technological progress.

Initially, Lederer rejected the compensation theory which was based on the arguments that the displaced workers will be absorbed by the industries producing the same machines that are responsible for their unemployment and, secondly, on the fact that technical progress does not reduce total purchasing power and thus the demand for labour cannot diminish. 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" (Lederer 1938, p.149). As far as the second statement is concerned, Lederer argues that there is no connection essentially between the preservation of the total purchasing power and the sustention of the demand for labour in the same level. In fact demand for labour could perfectly well decrease (Lederer 1938, p. 151). Overall, his analyses point to the absence of automatic compensation mechanisms and he finally arrives at the conclusion that the introduction of labour-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" (Lederer 1938, p. 218).

It should be noted that there is a difference in the way Schumpeter and Lederer defined technological unemployment. Schumpeter's definition covers all the cases where an innovation is applied and, as discussed earlier, innovation for Schumpeter encompassed a very wide range of phenomena ('inventions' and 'technical improvements' as defined by Lederer both come under that same heading) while Lederer considers technological unemployment as the result of technical improvements and in particular to labour-saving technical improvements. Overall, Lederer considered the effects of labour-saving technical improvements to be more closely linked with medium-term unemployment than inventions because the later "will not reduce the volume of employment but may even increase it temporarily during the period of actual investment." (Lederer 1938, p. 25).

On the other hand, Hilferding linked technological change to the formation of monopolies, which mark a distinct phase in capitalist development and are the main feature of economic development. He considered technical progress to be the condition *sine qua non* for assuring a cartel's or a trust's supremacy in the market: '[O]nce a combination has come into existence as a result of economic forces it will very soon present opportunities for the introduction of technical improvements in the process of production' (Hilferding 1910, p. 197). In fact: "They are obliged to introduce these [technical] improvements, for otherwise there is a danger that some outsider will use them in a renewed competitive struggle […]. [I]n this case technical improvements mean an extra profit, which is not eliminated by competition" (Hilferding 1910, p. 233).

It is this technical superiority that makes the monopolistic formations able to maintain and constantly reproduce their dominant role: "These technical advantages, once achieved, in turn become powerful motive for forming combinations where purely economic factors would not have brought them about" (Hilferding 1910, p. 197). "The corporation can thus be equipped in a technically superior fashion, and what is just as important, can maintain this technical superiority" (Hilferding 1910, p. 123).

As far as the hypothesis that perfect competition is an unstable market structure where only large enterprises can push technological progress forward, Hilferding's views are very interesting. For Schumpeter, once big corporations are formed, the imperfectly competitive market structure becomes stable, as large firms become increasingly conducive to technological progress and change: "There are superior methods available to the monopolist which either are not available at all to a crowd of competitors or are not available to them so readily" (Schumpeter 1942, p. 101). "The perfectly bureaucratized giant industrial unit […] ousts the small or medium-sized firm" (Schumpeter 1942, p. 134). On the same line of argument, the large firm is considered to possess the ability to attract superior "brains", to secure a high financial standing (Schumpeter 1942, p. 110), and to deploy an array of practices to protect their risk-bearing investments.[4]

In his *Finance Capital,* Hilferding had developed a similar approach: "The expansion of the capitalist enterprise which has been converted into a corporation […] can now conform simply with the demands of technology. The introduction of new machinery, the assimilation of related branches of production, the exploitation of patents, now takes place […] from the standpoint of their technical and economic suitability. […] Business opportunities can be exploited more effectively, more thoroughly, and more quickly […] A corporation […] is able, therefore, to organize its plant according to purely technical considerations, whereas the individual entrepreneur is always restricted […] The corporation can thus be equipped in a technically superior fashion, and what is just as important, can maintain this technical superiority. This also means that the corporation can install new technology and labour saving processes before they come into general use, and hence produce on a large scale, and with improved, modern techniques, thus gaining an extra profit, as compared with the individually owned enterprise" (Hilferding 1910, pp. 123-4). Consequently, "The introduction of improved techniques […] [benefits] the tightly organized cartels and trusts. [T]he largest concerns introduce the improvements and expand their production" (Hilferding 1910, p. 233).

Overall, there is a common tendency, to all three economists, to regard innovation as a determinative factor in 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 the their disruptive character and more specifically on the effects that the introduction of innovation is bound to have on the labour market. Schumpeter and Lederer share with

[4] The thesis regarding the limited ability of free competition to promote technological progress is supposed to be a conclusion drawn from past historical experience. More precisely, Schumpeter argued that the capitalist era could be divided into two distinct periods (Screpanti and Zamagni 1993, p. 243 ff.): (a) The era 'competitive capitalism' when small enterprises dominated, an era which declines in the 1880s and (b), the era of monopolistic or 'big-business capitalism' during which large enterprises, trusts and cartels dominated, starting roughly from the 1880s and having consolidated its fully fledged form by the time Schumpeter's book was written. In Schumpeter's own words: "[i]t is still permissible…to call the nineteenth century *κατ' εξοχήν* the time of *competitive*, and what has so far followed, the time of increasingly *'trustified'* or otherwise 'organized', 'regulated', or 'managed', capitalism" (Schumpeter 1928, p. 363).

Hilferding the view that the structure of the market promoting technological change is the one defined by the domination of great monopolistic concerns.

5. Credit

Schumpeter was realist enough to see that if someone wants to function as entrepreneur, he must raise funds. The provision of credit comes from the capitalist. The capitalist may, of course, use funds which are themselves the result of successful innovation and entrepreneurial profit (Schumpeter 1912, p. 72). The capitalist bears the financial risk (the entrepreneur risks his job and his reputation) and, because capital utilization is nothing but the diversion of the factors of production to new uses (Schumpeter 1912, p. 116), the capitalist has some power to dictate new directions to production (te Velde 2001, p. 7).

In his *Theory of Economic Development* Schumpeter defined economic development as a phenomenon "entirely foreign to what maybe observed in the circular flow or in the tendency toward equilibrium"; it is a "spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing" (Schumpeter 1912, p. 64), so that the "new combination of means of production" and "credit" were the "fundamental phenomena of economic development" (Schumpeter 1911, p. 74).

Schumpeter stressed the importance "of credit means of payment created *ad-hoc*, which can be backed neither by money in the strict sense nor by products already in existence" (Schumpeter 1912, p. 106). In this manner, credit performs the functions of "enabling the entrepreneur to withdraw producers' goods which he needs from their previous employments, by exercising a demand for them, and thereby to force the economic system into new channels" (Schumpeter 1912, p. 106). For Schumpeter credit provides an additional purchasing power that enables him to foster development "Granting credit in this sense operates as an order on the economic system to accommodate itself to the purposes of the entrepreneur" (Schumpeter 1912, p. 107).

Lederer's view is consistent with Schumpeter's thesis that anyone who wants to act as entrepreneur in the pursuit of profit, he must raise funds, the provision of which comes from the capitalist. In turn, the capitalist may, of course, use funds which are themselves the result of entrepreneurial profit or just the incentive for new profit: “Heavy demands on the credit market are therefore only likely to arise as the result of sudden prospects of large profits” (Lederer 1938, p. 230). In this context, Lederer regarded credit as an indispensable phenomenon of economic expansion just like Schumpeter did: “fresh opportunities arise of expanding production through credit” (Lederer 1938, p. 230). In fact, the possible absence of credit from the economic system would be catastrophic for many industries: “without any credit expansion the static industries would have contracted” (Lederer 1938, p. 230). Consequently, the only way of preventing a capitalist enterprise from expansion would be the absence of credit: “the introduction of a new process of production can only be held up by the absence of extra means of payment” (Lederer 1938, p. 224).

Furthermore, Lederer's thesis has striking similarities with Schumpeter's respective thesis emphasising the discontinuous character of the need for credit which is one of the driving forces of economic development: “In the more advanced stages of economic development [...] the demands for credit [...] arise spasmodically on the capital market” (Lederer 1938, p. 230). Lederer systematically stressed the importance of innovation in raising credit. In other words, the application of technical improvements is the main reason for credit creation by the part of the entrepreneur: “Heavy demands on the credit market are therefore only likely to arise as the result of sudden prospects of large profits, created in particular by the opening up of new markets, the manufacture of new products, and improved methods of production in the broadest sense of the term. But...technical progress...may be regarded as the main cause of the demands for credit which arise” (Lederer 1938, p. 230).

Hilferding also emphasized in his analysis the crucial role of “credit money”. However, Hilferding differentiated between paper money “which emerges from circulation as a social product”, and credit money which is a “private affair”, not backed by the government (Hilferding 1910, p. 66). In this last case, money can be replaced by a promise to pay. The development of the capitalist system is followed by a rapid increase in the total volume of commodities in circulation: “the expansion of production, the conversion of all obligations into monetary obligations, and especially the growth of fictitious capital, have been accompanied by an increase in the extent to which transactions are concluded with credit money". So, Hilferding concluded that credit money required "special institutions where obligations can be cancelled out and the residual balances settled, and as such institutions develop so is a greater economy achieved" (Hilferding 1910, p. 66). This is a fundamental function of the banking system.

For Hilferding credit originated as a consequence of the changed function of money as a means of payment. A purchase not followed by direct payment, i.e. a delay in payment "means that one capitalist has enough surplus capital to wait for payment for the purchaser, the money due is credited" and "money is…merely transferred" (Hilferding 1910, p. 82). However, when a promissory note functions as a means of payment, money capital has been saved, and this type of credit is called "circulation credit" (Hilferding 1910, p. 83). According to Hilferding, this credit form increases transactions between capitalists and so an increased demand for production capital emerges.

He believed that an increase in production means a simultaneous expansion of circulation and "the enlarged circulation process is made possible through an increase in the quantity of credit money" (Hilferding 1910, p. 83). However, circulation credit, does not "transfer money capital from one productive capitalist to another" (Hilferding 1910, p. 87). This role is played by another form of credit, which converts idle money into active money capital, and is called "capital credit". This credit form constitutes a transfer of money to those who use it as money capital, i.e. for the purpose of purchasing the elements of productive capital. Conclusively, credit "puts money into circulation as money capital in order to convert it into productive capital" (Hilferding 1910, p. 88). This expands the scale of production with the simultaneous expansion of circulation. Thus, the scale of circulation is enlarged by utilization of *previously idle money*.

In brief, the role of credit is given special attention by all three theoreticians and it is considered as a necessary institution for the functioning of the capitalistic system. Schumpeter and Lederer linked credit creation with entrepreneurship and regarded it as a precondition for technological change and the introduction of innovations. Hilferding portrayed the role of credit money in the economic system as a necessary element for the expansion of production.

6. Economic Fluctuations

Despite many apparent similarities in their respective theses analysed in the previous sections, the three major theoreticians' views on the nature of economic crises and fluctuations seem to diverge in some aspects.

The popular interpretation of Schumpeter's theory is that long waves are caused by the clustering of innovations. However, to be more precise, 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.[5] Schumpeter conceptualized long waves as disturbances in the equilibrium and a return to equilibrium point. This repeated return to equilibrium point gives the process its cyclical character.[6] All economic systems have an esoteric tendency towards equilibrium and move toward these "neighbourhoods" after the disruptions have exhausted themselves. The most important characteristic of these "neighbourhoods" is that economic conditions are stable (Schumpeter 1912, p. 214).

Economic evolution begins when an entrepreneur introduces an innovation, which enables this exceptional entrepreneur to make (monopolistic) profit and stimulates the borrowing of capital in order to finance new investments. The activity of the first entrepreneur smoothes the path for other entrepreneurs. This "swarming of entrepreneurs" is financed through credit creation. Credit permits these firms to "bid away" factors of production from older, non-innovating firms. In turn, this produces a rise in the level of prices and a general economic expansion which characterises the first phase (i.e. prosperity) of Schumpeter's model. Prosperity reaches its upper point for several reasons. Older non-innovating firms, which are unable to compete with new firms, suffer losses. New investments are halted and it is impossible to make calculations. The possibilities offered by the innovations are exhausted. The subsequent downturn marks the second phase (i.e. recession) of the cycle. The decline continues attributed to "errors, excess of optimism...Reckless, fraudulent and otherwise unsuccessful enterprises

5 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, pp. 68-71).

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

created in the optimism of expansion cannot stand the test administered by Recession" (Schumpeter 1939, p. 122). They are liquidated and these liquidations cause a "panic". Meanwhile, deposits shrink and credit tightens. Because of this situation, firms which would have been able to sustain the pressure are liquidated and there is "a shrinkage of operations that reduces them, quite erratically, below their equilibrium levels" (Schumpeter 1939, p. 125). These liquidations and the shrinkage of enterprises constitute the third phase (i.e. depression) of the cycle. Depression continues until all (unsuccessful) investments are liquidated, and once this point is reached, a movement towards a new "neighbourhood of equilibrium" signifies the fourth phase (i.e. revival).[7]

Schumpeter stressed actors in his analysis 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, pp. 3-4). Thus, innovation, for Schumpeter, is not an "economic fact" but a type of conduct. For Schumpeter, an adequate explanation of economic phenomena consists in "finding a definite causal relation between two phenomena...if the one which plays the causal role is non-economic. If, on the other hand, the causal factor is economic in nature, we must continue our explanatory effort until we ground on the 'non economic' bottom. Always we are concerned with describing the general form of causal links that connect the economic with the non-economic" (Schumpeter 1912, p. 5). After all: "instability may arise from particular influences from without, which cannot properly be charged to the economic system at all" (Schumpeter 1928, p. 362).

Obviously, long waves are not caused by the clustering of innovation because the clustering of innovation (i.e. an economic fact) does not represent the "non-economic" bottom. Hence, the clustering of innovations *per se* is not the cause of the long wave and Schumpeter seeks causality at the level of motives. An acceptable explanation has to link economic conduct to motives (Schumpeter 1912, p. 10). Thus, the cause of long waves

[7] Schumpeter emphasized that a cycle is "a historical individual and not merely an arbitrary unit created by the observer" (Schumpeter 1939, p. 131). Each wave is a break with the past and the economic system which emerges is qualitatively different from the economic system previously existing. In other words, long waves are not "imperfections" in the economic system. Instead, the innovations propelling these waves produce real qualitative changes in the economic system (Schumpeter 1935, p. 4).

lies at the level of what motivates the entrepreneur. Although entrepreneurs possess an ability to affect this conduct, it occurs discontinuously. Thus, it is necessary to explain *what drives* entrepreneur to innovate. These factors could be accounted but the subjective meanings of the individual entrepreneurs cannot. In other words, 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, p. 10, emphasis added). The actual motives represent the "non-economic" bottom and once our analysis has reached this level, causality has been explained. Schumpeter (1912, p. 5) wrote: "[O]ur problem is solved if the one which plays the causal role is non-economic. We have accomplished what we, as economists, are capable of in the case in question and must give place to other disciplines".

Konjunktur und Krisen (1925) was Lederer's first attempt to provide a theoretical explanation of the business cycle, an issue which he regarded as being very important: "We can say without exaggeration that the bulk of modern theory is business-cycle theory" (Lederer 1936, p. 157). In this first attempt, Lederer constructed an explanation consistent with the so–called "disproportionality theory" introduced by Tugan–Baranowsky and later adopted by Hilferding and others (see below). Lederer argued that: "Almost all the cycle theories agree about the nature of these disturbances-they are disproportionalities" (Lederer 1936, p. 156).

In this work the boom period starts due to an increase in effective demand, which is attributed to the social groups with fixed incomes (i.e. public employees and rentiers). Credit creation follows and it is regarded as an essential component of the booming 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.

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 decrease 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.

Lederer's vision concerning business cycles changed, to a considerable degree, in his later work. In *Technical Progress and Unemployment* his description of the business cycle is, obviously, more Schumpeterian. The initiation of a boom is explained now by supply-side factors, rather than an increase in demand, 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' is used by Lederer to describe "technical innovations as led to the production of goods which enlarge the scale of needs" (Lederer 1938, p. 7). and create " hitherto unknown 'genuine' or 'social' needs" (Lederer 1938, p. 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, p.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, p. 135). Lederer's analysis of the booming period after the introduction of inventions does not mention the possibility of a depression phase following it.

Rationalisation 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 labour-saving) related to increased efficiency in organization. In contrast to the application of inventions, rationalisation and especially labour-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 labour, which can be financed by recourse to extra short and long-term credit" (Lederer 1938, pp. 233-4).

Credit expansion for Lederer is 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 arguing that: "The discussions of the last fifteen 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, p. 156).

However, when the initial wave of expansion, caused by rationalisation, 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, p. 244). His analysis is mainly focused on the prospects of reabsorption of the displaced workers that rationalization has produced and so he does not provide a detailed theoretical description of the depression phase.[8]

Regarding the prospects of a revival that are reinforced through the course of the depression phase, Lederer explicitly mentions 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” (Lederer 1938, p. 227).

Despite Lederer’s lack of a complete theoretical exposition of the business cycle phases and effects, he shares common insights with Schumpeter. One theme they have in common is the role that unsound credit can play in the causation of a depression phase. Lederer pinpoints 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 industries and secondly in the capital good industries. The danger inherent in this sequence of events is 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

[8]Lederer analyses various cases in which the form of the production function (increasing or decreasing returns to scale), the elasticity of demand (greater, lower or equal to unity) the structure of the market (perfect competition, cartels) and the existence of unused reserves are taken into account in their different combinations to examine the conditions that will enable reabsorption of the discpaced workers.

therefore in business credits" (Lederer 1938, pp. 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 (see Schumpeter 1928). Both writers attribute 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 use to describe the onset of the boom period. They both assume a stationary economy without savings and unused reserves. As it has been mentioned the impulse which sets the system in motion is the application of innovations. Both writers in their exposition of their model make the simplifying assumption that these innovations will be implemented by the setting up of new enterprises (rather than being implemented within the existing firms) 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 materialisation of their business plans forces them to exercise a demand for producer's goods and labour 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. Differential profits will be earned in the course of the prosperity period (Schumpeter 1939, Vol. 1, pp.130-8; Lederer 1938, pp. 236-8).

Rudolf Hilferding, in his own discussion of economic crises (see Hilferding 1910, ch. 16-17) argued that "such expressions as 'overproduction of commodities' and 'underconsumption' tell us very little" (Hilferding 1910, p. 241). He, thus, investigated the specific causes of economic crises and, in particular, the disproportionality between the capital goods and consumer goods industries which was according to him the real cause of instability and crises (see also Milios 1994; Milios *et al.* 2002, ch. 6, 8).[9] More precisely, Hilferding, in a fine Austrian fashion, emphasised the distortions in the structure of prices as fundamental to the propagation of capitalist crises. After presenting

[9] Tugan-Baranowsky, exposed a "disproportionality theory" in his *Studien zur Theorie und Geschichte der Handelskrisen in England* (1894). However Hilferding disagreed with him in some aspects (Hilferding 1910, pp. 421-2).

his disproportionality theory, Hilferding made comments about the changes in the character of crises because of the growth of monopolies and cartels.

Hilferding created a theory of economic fluctuations based upon the notion of disproportionality crises. This disproportionality theory, delivered by Hilferding (1910) in his *Finance Capital*, is based on a two-sector model with the difference in organic composition of capital between sectors producing a time lag structure in production and capacity expansion. This (asymmetric) time lag structure causes, in turn, an (asymmetric) price structure across the various sectors, which causes, in the end, a disruption in the proportionality relations required for smooth capital accumulation. Hilferding argued that if changes in prices are uniform then there is no redistribution of capital among the various branches and the conditions of smooth capital accumulation are satisfied. Crises occur only if the increase in prices has a non-uniform character.

Hilferding explained how this asymmetric price structure leads to a period of crisis: As investment increases and the organic composition of capital increases in the 1st sector, the time it takes for installation becomes longer, creating time lags in investment and expansion. The time lag in this sector causes supply to adjust to demand with delay, leading to an increase in prices at a faster rate than the 2nd sector and hence to a pressure to invest in these industries. Thus, the increase in the organic composition of capital will, in the long run, lead to a decline in profits. However, in the short run, the asymmetric rise in prices will lead to asymmetric increases in profits between the two sectors. This causes over-investment and accumulation in the sector with the higher organic composition of capital, and because production in the other sector (i.e. with the lower capital intensity) has not increased proportionally, prices and profits drop and crisis sets in.[10]

Obviously, a more complete theoretical analysis could have possibly shed more light on various aspects of economic crises. For instance, his approach does not differentiate between a prolonged crisis implying a breakdown in the total economy and a possible cyclical crisis. In this respect, we do not know whether the disproportionality crisis manifests itself as a generalized crisis, i.e an overall breakdown of the economy. Also, Hilferding's approach provides us with no information concerning the sectors

[10] According to Darity and Horn (1985, p. 364) Hilferding’s attitude towards prices is apparent in his last publication (Hilferding 1963).

which do not experience time lags in production. It is only implied that these sectors exhibit fluctuations as a result of the capital movements between them. And this result, in turn, implies that capital allocation between sectors, does not lead to stability - as argued by orthodox theory - but to the transmission of fluctuations to the whole of the economy.

Apparently, Lederer's early description of the business cycle is consistent with Hilferding's disproportionality crisis just analysed. After all, Lederer himself emphatically stressed that "even a blind man can see that that [the lack of proportion between producers' and consumers' goods production] is characteristic of every cycle" (Lederer 1936, p. 157) and acknowledged the work of the great Marxist thinker: "That the lack of right proportions between the different branches or spheres of production breeds the cycle is the view of the theory on Marxian lines, also (f.i. R. Hilferding, R. Luxemburg)" He even went on to admit that: "This and similar views were widely discussed…and shared by theorists who would not subscribe to the revolutionary implications of that theory" (Lederer 1936, p. 157).

Up to this point we have emphasised the affinity between Schumpeter's, Lederer's and Hilferding's analyses regarding the issues of economic change, technology, credit and business cycles. In the next section we are going to summarise these ideas and make some concluding remarks.

7. Conclusion

It was the purpose of the present paper to compare Joseph Schumpeter, Emil Lederer and Rudolf Hilferding with respect to their visions concerning the notions of economic development, credit and business cycles. There are two reasons why studying the potential relationship between these three theoreticians is of great importance. First, tracing the theoreticians that he interacted with is an essential key for understanding Schumpeter's economic works; second, because understanding the origins of these ideas helps us to clarify the contrasts between orthodox economics and the Schumpeterian approach.

Despite the fact that the three economists are traditionally classified in different schools of thought, their theoretical investigations in a great number of thematic areas and concepts seem to converge to similar views. For instance, all three 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 labour market and the concept of technological unemployment are described in a similar manner by both of them. Hilferding stressed the importance of technology but mostly with respect to market structure and, more specifically, the emergence of monopolies and cartels. Schumpeter and Hilferding both regarded that domination of the market by monopolies has positive effects as far as the propensity for technological change is concerned, due to the possibility of extra profits which are not possible under conditions of perfect competition.

The function of credit is another central theme in the works of all three theoreticians. This idea seems to have influenced Schumpeter's theory of markets and competition. Besides, they all comprehended in a similar manner the way that credit expansion infuses dynamism into the economic system, creating, thus, on the one hand new growth prospects, and on the other financial and economic instability.

Also, regarding the issue of economic crises and fluctuations, all three economists considered them as an endogenous characteristic of the capitalist system and not simply as the result of external factors or shocks. Schumpeter and Lederer argued that business cycles arise from the disruptions created by innovations, which are introduced discontinuously into the economic system, whereas Hilferding focused on the role of disproportionality between sectors producing capital goods and those producing consumer goods. At this point it is interesting to note that, in his early writings, Lederer had adopted many of Hilferding's theses presented in his disproportionality theory.

Finally, as far as their methodological approaches are concerned, they seem to converge significantly, since all three economists tend to support their theoretical arguments with empirical data and exhaustive discussions. In other words, their works present a strong link of theoretical reasoning and empirical evidence.

Conclusively, all three writers, in spite of their theoretical differences, have delivered theses which are similar in scope and conclusions. Obviously, much of this similarity can be attributed to their common socioeconomic environment and to the common influences by certain theoreticians and schools of thought (e.g. Austrian tradition, Austro-Marxist economics, etc), not always acknowledged in the literature. Part of the explanation why this similarity in visions has been inadequately acknowledged until today is the product of ignorance outside Germany of the approaches on which Schumpeter built his treatises, given that German non-Marxian economics was represented, in the Anglo-Saxon world, almost entirely by Schumpeter.

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