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Sumner Slichter and Emil Lederer: Central Visions Compared*

Ioannis Katselidis, Angelos Vouldis *and* Panayotis G. Michaelides

Abstract: Sumner Slichter was “perhaps the most influential industrial economist in America”, while Emil Lederer was “the leading academic socialist of Germany in the 1920’s”. However, most aspects of their works remain unexplored. This paper analyzes Lederer’s and Slichter’s central theses. Given the presence of main elements of both economists’ visions in the famous Debate on Technological Unemployment which took place in the U.S.A. (1928-1933), it is surprising that so little attention has been paid to their works. After a careful examination of their writings, their theoretical investigations in a great number of thematic areas seem to converge. Analytically, both economists, attempted to explain the apparent inability of the economic system to readjust and absorb the unemployed workers. Also, both economists disputed the assertion of Say’s law that full equilibrium would be assured by the functioning of market forces. They both emphasised on the role of technical change. Another interesting aspect of both economists’ investigations is their respective theoretical shift around 1930 which could be related to the disastrous consequences of the Great Depression. The paper concludes that, despite some obvious differences between Lederer and Slichter, the parallels are undeniable.

1. Introduction

Joseph Alois Schumpeter, “one of the greatest economists of all time” (Haberler, 1950, 1), once described the great Austrian theoretician Emil Lederer as “the leading academic socialist of Germany in the 1920’s” (Schumpeter, 1954, 884). However, with the exception of very few papers (e.g. Allgoewer, 2003; Dickler, 1981, 1983, 1987; Diebolt, 2006; Esslinger, 1997, 1999; Hagemann, 1997, 2000; Michaelides *et al*, 2009; Michaelides *et al*, 2010) no adequate research seems to have been done on Emil Lederer’s works and, as a result, most aspects of Emil Lederer’s works and his affinities with other great economists remain unexplored.

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This paper attempts to provide only a partial answer to this question, regarding the affinity of certain of Emil Lederer's elaborations with Sumner Slichter's works, i.e. "probably the best-known economist in America at the peak of his career" (Dunlop, 1961, Preface) and "perhaps the most influential industrial economist in America" (University of California Committee on Academic Freedom, 1951, 22).

Despite the fact that there is no "systematic study of *influence* in the economics profession" (Leeson, 1997, 637, *emphasis in the original*) there is one very serious reason why studying the potential influences on Lederer is of great interest: Given that Lederer was probably "the leading academic socialist of Germany in the 1920's", the study of his affinities with other great theoreticians is an important key for understanding his economic writings. Obviously, understanding the origins of these important ideas in *Economics* and re-evaluating the influences that might have shaped these ideas may be very useful for promoting dialogue between different Schools of Economic Thought and clarifying several issues.

Also, Lederer was the student of great personalities of the Austrian camp such as Menger, Wieser, Böhm-Bawerk etc, at a time when Vienna's "techno-romantic" civilization (McCraw, 2007, 3) was a 'melting pot' of nationalities and the capital of economic theory (Michaelides and Milios, 2005). In this context, the question of the affinities of Lederer's works with other great theoreticians becomes of great interest and deserves further analysis. Affinities can be shown in many ways. One of the most common is when an author shows traces of the thinking or consistently uses the contributions of authors in his work (Senn, 2003, 142).

More precisely, this paper makes an attempt to interpret certain parts of Emil Lederer's *oeuvre* in association with the writings of Sumner Slichter. Following Shionoya (2005, ix), we would like to affirm the following thesis, which has been the point of departure of our investigation: "Even if the core of a certain idea were identified in the

continuous and discontinuous process of the filiation and ramification of thought, it is still possible to trace its predecessors, successors, and sympathizers in different directions”. Of course, it is the case that tracing these paths for many of the theories in the history of economic thought is usually quite difficult.

The paper is structured as follows: section 2 presents brief biographical information on the two economists’ life and works; section 3 discusses the rise of the debate on technological unemployment; section 4 sets out Sumner Slichter’s central vision based on technological unemployment; section 5 describes Emil Lederer’s central vision also based on technological unemployment; section 6 summarizes and compares their respective theses; finally section 7 concludes the paper.

2. Sumner Slichter and Emil Lederer: Brief Biographical Notes

Sumner Huber Slichter (1892-1959) was born in the U.S.A., in the university town of Madison. His father was Professor of Mathematics at the University of Wisconsin, where Slichter received both his B.A. (1913) and M.A. (1914) in *Economics* (Dorfman, 1969, 538). During that period, the leading figure of the Economics Department at the University of Wisconsin was John Commons. However, Slichter did not receive his PhD from Wisconsin, but from the University of Chicago in 1918 with Harris Millis¹ as supervisor.

Meanwhile, he also studied for a year in Europe, namely at the University of Munich, where Emil Lederer had received his own PhD in 1911, where Slichter probably got acquainted with Lederer’s work. However, we do not know if the two great theoreticians ever met in person. After a short period at Princeton University, Slichter

¹ His PhD dissertation was entitled “The Turnover of Factory Labor”, and as Dorfman (1969, 539) argued: “it remained for a long time the most comprehensive study of the subject”.

became associate professor at Cornell (from 1921 to 1929-30) specializing in labor economics and industrial relations, a topic that has been of paramount importance in Lederer's research agenda as well. In 1930, Slichter joined the academic staff of Harvard University as Professor of Business Economics, and he remained there through the end of his career.

Despite the fact that Slichter never taught at Wisconsin, he is regarded (Rutherford, 2006) as one of the most prominent members of the famous *Institutional School of Wisconsin*, which had a significant contribution in American economic thought and policy during the first half of the 20th century. Slichter has contributed to many research fields related to *Economics*. He wrote more than ten books and published more than fifty articles in academic Journals, and "he was probably the most widely read economist by the general public of his day" (Dunlop, 1987, 355; Christenson, 1961, 672). In addition to his academic work, he also served as President of the *American Economic Association* (1940-41). His research interests included labor economics, industrial relations and macroeconomic analysis.

Now let's turn to Emil Lederer. He was born in Pilsen (Bohemia) in 1882 to a Jewish merchant family. However, he spent a great part of his life, just like Slichter, in the USA. He studied at a German speaking university (i.e. the University of Vienna) just like Slichter did for a while, and during his studies he focused on *Economics* as was also the case with Slichter. He took his doctoral degree in 1905. 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.

Lederer was active in Social Democratic circles in Austria and Germany. In 1919, he was appointed member of the *German Socialisation Committee*. At Heidelberg University, Lederer became full professor in 1920. From 1922 until 1933, Lederer was Editor of the

*Archiv für Sozialwissenschaft und Sozialpolitik*². In 1931, he succeeded Herkner at the *German Faculty for National Economy and Financial Sciences* at Humboldt University of Berlin.

In 1933 the Nazis forced Lederer to immigrate³. He went to the USA where he co-founded in 1933 the *University in Exile* at The New School for Social Research in New York City (Johnson 2000). Emil Lederer was its first dean until his sudden death in 1939. Typically, Lederer is *not* regarded as a member of the Austrian School; rather he is considered an important supporter of interdisciplinary social science. His writings cover a broad range of topics including essays on the sociology of war, the theory of classes and the emergence of totalitarianism.

3. The Rise of a Debate

The relationship between technological change and employment was a topic which had been already examined by several classical economists, such as Ricardo. However, old issues and puzzles reemerged, instigating new sharp debates. Thus, the publication of new extensive productivity data during the 1920s initiated the ensuing so-called Technological Unemployment Debates.

Before the 1920s, it was common belief that there was a lack of adequate industry productivity measures in the US. However, the situation changed during the 1920s, since there was a rapid development of sources in productivity information. More precisely, the Bureau of Labor Statistics (BLS) had already started a productivity data project in the

² This journal published path-breaking articles such as Weber's "The Protestant ethic and the 'spirit' of capitalism" (1905), von Bortkiewicz's "Prices and Values in the Marxian system" ("Wertrechnung Preisrechnung im Marxschen System", *Archiv für Sozialwissenschaft und Sozialpolitik*, 1906, Vol. XXIII, Heft 1, 1-50; *ibid.*, Vol. XXV, 10-51; 1907, 445-488) and Kondratieff's "The Long Waves in Economic Life" (1926). See Hagemann (2005).

³ For Lederer's attempt to sociologically understand the main features of war, especially World War I, see Lederer (2006).

early 1920s, which, however, was “abandoned in 1924 because of a lack of funds and a shortage of staff equipped to handle the complex technical work” (Goldberg and Moye, 1985, 134-135). Nonetheless, that productivity data program restarted in 1926 “in response to a policy change by the American Federation of Labor (AFL), (which) at its October 1925 convention [...] announced a new wage policy of tying wage demands to productivity increases” (Woirol, 2006, 475). Apart from the BLS study, in 1926-1927, a number of productivity studies were published in the U.S., which provided comprehensive productivity data⁴.

These productivity studies revealed the coexistence in some industries of a rise in the productivity of workers and a fall in employment levels. These data “led to widespread popular concern that rising productivity might cause rising unemployment” (Backhouse, 1997, 2075). Much of this unemployment was produced by the introduction of new technology. New labor-saving methods and machines, by raising the productivity of workers, made some of them completely redundant, since the same level of output could be achieved with fewer workers, exacerbating thus the problem of low employment and unemployment.

The publication of the mid-1927 US productivity studies attracted attention and led some economists to reconsider the question of unemployment created by technological progress. Nevertheless, it is worth noting that at that time the great majority of the economists tended to undermine the importance of technological unemployment (Garraty, 1978). More precisely, it was generally accepted that only few workers – primarily the older ones – lost their jobs by the adoption of new technologies. Most economists supported the conclusion based on Say’s law, namely that technological

⁴ The four major sources of productivity data, appeared in the United States from May to July 1927, were the following: “(1) the BLS summary of its 1926-27 manufacturing industry studies in the Handbook of Labor Statistics 1924-1926; (2) the BLS manufacturing sector index combining Census Bureau and Federal Reserve Board (FRB) data; (3) the Day-Thomas census monograph of the manufacturing sector index; (4) and the Durand (1927) Department of Commerce indexes for manufacturing, agriculture, mining, and railways” (Woirol, 2006, 478).

unemployment was a purely temporary phenomenon, and that the labor market and the economic system, in general, would reabsorb the unemployed people, at least in the long run. However, during the first years of the 1930's, that argument was strongly criticized by some prominent economists, who considered unemployment -due to technical progress- to be a very serious and permanent phenomenon.

This led several economists to the belief that the negative effects of technological unemployment might be both serious and lasting. Sumner Slichter and Emil Lederer were two of the most distinguished proponents of that new consensus, which disputed the validity of Say's law and stressed the fact that there were rigidities in the economy, which could obstruct the re-absorption process (Backhouse, 1997).

In brief, the economists adopting Say's law argued that technological change has only short-run adverse effects on employment and labor; on the other hand, some other economists asserted that the negative technological effects on employment are more lasting due to the price or other form of rigidities which do not permit the re-absorption process to function properly. Lederer and Slichter, who adopted the latter approach, were mainly in consensus with Rexford Tugwell and Alvin Hansen, while other well-known economists such as Gottfried Haberler and Paul Douglas were proponents of Say's law, adopting a rather orthodox (neoclassical) approach.

Finally, after 1933, although theoretical contributions on the debate ceased to exist, some empirical contributions made their appearance. However, according to Woirol (2006, 489), "empirical contributions by economists during the 1930's did not follow as clear a pattern as did the theoretical ones [...] The major factor restricting the impact of empirical studies during the 1930s was the quality of data".

4. Sumner Slichter's Central Vision

In an important contribution, Woirol (480, 2006) argued that “the term ‘technological unemployment’ apparently first appeared in an 8 February 1928 article in the *New Republic* by Sumner Slichter”. Slichter, in the first place, did not believe in the existence of an absolutely negative relationship between technological development and employment. So, in an article in 1929 in the *American Economic Review*, he argued that “in many industries [...] radical technical changes during the last six or seven years have been accompanied by substantial increases in employment” (Slichter, 1929, 8). According to Slichter, despite the fact that technological advancement in a specific industry might have a negative impact on the level of employment in that industry, at the same time, through the diffusion of technology, it could lead other industries to increase their employment levels. He argued that there is no reason why labor-saving machines must inevitably reduce the number of jobs given that the demand for men in a particular industry may possibly shrink, but the total demand will not necessarily diminish, because the demand in other industries may increase (*ibid*, 9).

Slichter argued that falling or stationary employment in some industries was owed, to a large extent, in the deficient demand of those sectors, which caused a substantial contraction of their market. For example, as Slichter pointed out, employment in farming, manufacturing, railroading and mining has diminished or has remained stationary, not simply because labor has become more productive, but because its growing effectiveness has been coupled with a reluctance on the part of the public to spend more for agricultural products, manufactured goods, minerals, and railroad service. “Due to the state of demand, the growing effectiveness of labor has tended to displace men quite as much as to increase the total industrial output” (*ibid*, 11-12).

In addition, he argued that there was a close relationship between the market mechanism and technical progress. Thus, when an industry faces the problem of low demand for its products, it will try first to minimize its cost of production. An effective way to achieve this goal was to improve its technology and introduce labor-saving machines, trying to replace workers with machines. He was of the opinion that in their searches for every possible way of cutting costs, employers have discovered many ways of obtaining more output with fewer men. Consequently, not only has the state of the market been responsible for men's losing their jobs when technical progress has occurred but it has been an important cause for further (technical) improvement (*ibid*, 13).

Slichter asserted clearly that unemployment was a price phenomenon: "The basic fault with technical progress as an explanation of unemployment is that it overlooks the fact that unemployment is primarily a price phenomenon" (*ibid*, 10). Therefore, the role of wages was very significant for the labor market clearing. Often, the level of wages was either too high for employers to hire all the available workers, or too low for laborers to accept the existing jobs. In both cases, the result was an imbalance between demand for and supply of labor, namely the existence of unemployment. In addition, he held that there was a close association between price movements (wages, the prices of producers' goods and long-term interest rates) and technological unemployment. The interaction of particular price movements (e.g. a fall in interest rates or a rise in wages relative to the price of capital goods) with particular technical changes (e.g. the adoption of a labor-saving machine), could exacerbate the unemployment problem. Particular price movements created an incentive to employers for adopting such methods of production which involved the use of more capital and less labor.

Hence, in the first place, Slichter claimed that the underlying cause of labor displacement was not new technology, but price movements. He argued that even had no labor-saving devices been invented, recent price movements alone would have caused the

displacement of some workers (*ibid*, 14). Finally, the increase in wages could theoretically mitigate the employment problem by boosting the aggregate demand and thus increasing the number of jobs. But Slichter pointed out that there was an increased demand in branches of industry which used little labor in their production process given that there has been an enormously increased demand for many things in the making of which little labor is consumed (*ibid*, 20).

However, in the early 1930s, there seems to be a shift in Slichter's viewpoint. More precisely, while in his 1929 article Slichter considered particular price movements (e.g. the relative increase of wages compared with other prices, or the falling interest rates) to be the deeper cause of unemployment problem, in his 1932 article in the *American Economic Review*, he regarded technological change as the fundamental cause of unemployment and, more specifically, "labor-saving inventions" which reduce the cost of capital goods relative to labor. In that article, he viewed price movements only as potential rigidities inhibiting the re-absorption process. Slichter pointed out that many workers believed erroneously that a great part of unemployment was due to seasonal or cyclical factors, but in fact the real cause of high unemployment rate might be the labor-saving inventions.

Slichter clearly distanced himself from the dominant view proclaiming the absence of any link from technological change to permanent unemployment. According to the dominant view, technological progress does not create permanent unemployment, because it releases enough purchasing power to create a new job for every one which it destroys (Slichter, 1932, 42). Slichter regarded this argumentation as flawed since it overlooked the fact that technological change alters the composition of labor supplied and demanded. In addition, the quantitative equality between the new jobs created by extra purchasing power and those destroyed by technological change was regarded by Slichter as an arbitrary assertion which does not hold universally.

Subsequently, Slichter criticized the exorbitant optimism of many economists who overlooked the fact that the real labor markets could not adjust immediately to the new situation created by a technological change. He asserted that there were rigidities in the labor market, which did not permit the re-absorption mechanism to function properly, so the consequences of a technological improvement lasted more. Slichter was among those economists, including Hicks and Kaldor, who regarded the wages system as the most significant rigidity and the main impediment to full employment, since wages do not easily adjust to a technological change (Gourvitch, 1942, 101 and 149). Labor-saving inventions render the cost of labor high in comparison with other costs of production. In order for the labor market to continue being in equilibrium, the price of labor, namely wages should fall. But “wages [...] are a sluggish price - slow to rise and as slow to fall. When technological improvement reduces the price of capital goods, money wages are likely to remain about the same and industry’s demand for men is likely to fall below the supply. In other words, in a society in which technological progress is causing prices to fall, the sluggishness of money wages may cause real wages to rise too rapidly” (*ibid*, 43).⁵ In addition, the co-existence of falling prices and high money wages due to the advance of technology might reinforce the displacement of workers, since the above situation stimulates managers to search for ways of economizing labor (*ibid*, 44).

Meanwhile, Slichter sought to find ways of combating technological unemployment⁶. In this context, he argued that the problem of high labor displacement

⁵ Slichter had already in his 1929 (Slichter, 1929, 21) article referred to the wage-stickiness argument: “Wages have not decreased in the face of falling prices and a diminishing need for factory workers [...] Wages have always been notoriously slow to respond to changes in supply and demand. Consequently, wage changes have always been defective as a device for preventing unemployment”.

⁶ “If technological change affects the number as well as the kind and the location of jobs, a program for dealing with it naturally falls into two principal parts: (1) a program for adjusting the labor supply to changes in the kind and the location of jobs; and (2) a program for preventing labor-saving devices from retarding too much the growth in the number of jobs. First, let us consider the problem of adjusting the labor supply to changes in the kind and the location of jobs. There are three general ways of dealing with this problem: (1) retarding the rate of displacement; (2) encouraging the transfer of displaced men within plants by employers; (3) providing better facilities in the labor market for transferring the displaced men between plants and localities” (Slichter, 1932, 44).

because of rapid technological shifts was a rather usual phenomenon. The adjustment and re-absorption process through normal labor turnover could not keep pace with fast technological improvements. In the first place, enterprises benefited from new labor-saving technologies bore only a small part of the costs of these technologies, thus they had no reason to retard the introduction of these devices because under existing economic arrangements, labor-saving devices tend to be introduced too rapidly because the cost of adopting them falls, in large measure, not upon the enterprises which introduce them, but upon the rest of the community (*ibid*, 45).

Hence, he proposed the adoption of the dismissal wage, as an effective way to shift a larger part of the total cost to enterprises which receive the whole benefits: “An obvious way to prevent change from occurring too fast is to assess a larger part of the costs against the enterprises which reap the benefits and one way of doing this is to require every concern to pay a dismissal wage to each man whom it permanently lays off” (*ibid*, 45). Moreover, Slichter proposed a form of “flexibility”, i.e. job rotation, in modern terminology, as a second way of combating technological unemployment. He was of the opinion that a second way of preventing the displacement of men by technological changes was to encourage their transfer to other work in the same plant (*ibid*, 46).⁷

Slichter realized how significant was to adopt appropriate policies in order to create a flexible, versatile labor force with broad training and ability to adjust in changes. The role of a dismissal wage was also primary for this goal: “The establishment of a dismissal wage would give employers a badly needed incentive to develop general-purpose men who can be shifted to other departments or other work when changes occur. It would also encourage employers to retrain men” (*ibid*, 47). Slichter held that the dismissal wage

⁷ He pointed out that firms had no strong incentives to adopt a strategy of transferring workers to other tasks or re-organizing some of their departments. According to Slichter, “again the dismissal wage furnishes the needed incentive [...] Rather than pay \$200 or \$300 to men who have been displaced, it would often be more economical for the employer to re-organize some department or to develop jigs, fixtures, and mechanical aids so that these men could be transferred to other work” (Slichter, 1932, 46-47).

should follow a seniority rule, namely it should increase both with the length of service and with the age of the employees, so as the lay-offs to be concentrated among the younger and more flexible workers.

Of course, Slichter asserted that a dismissal wage was not *panacea*. He stressed the fact that very often old and obsolete plants were compelled to close due to technological improvements occurred in other more advanced competitive firms, producing thus mass unemployment. Therefore, there was also a great need for a well-organized labor market, which could meet the demands of a *dynamic* economy. However, he claimed that efficient public labor exchanges were far from enough (*ibid*, 48).

The problem of technological unemployment was not a matter of better matching between unemployed and vacancies. It was much more complicated. Technological changes created the need for new types of employees who should have some special skills and characteristics in order to fill in a vacancy. At the same time, there were unemployed people who did not correspond to the desires of employers, so they faced big difficulties in finding a job. As Slichter pointed out, the problem of keeping the labor supply adjusted to the ever-changing demands of industry is partly a problem of showing employers how they can use more of the types of men who happen to be available (*ibid*, 48).⁸

Slichter believed, as we have already noted, that technological improvements produced unemployment by causing the prices of labor to become high in comparison with the prices of capital goods. Here, the role of a dismissal wage could be significant in

⁸ According to Slichter, there was a need for advanced research in order to cope with the complicated problems caused by technological progress. Hence, Slichter suggested the establishment of an organization which could do that research, and could advise the government efficiently, proposing viable solutions. More particularly, “this need could be met by the establishment of a federal labor board composed of six or seven industrialists and labor leaders with possibly the secretary of commerce and the secretary of labor as ex officio members” (Slichter, 1932, 49). The technical staff of the board should undertake intensive studies whenever a new machine would displace labor. The aim of these studies should be the presentation of reasonable suggestions in order to cope with the problem of technological shift. In addition, Slichter emphasized the importance of a “legal tool with which the board might be equipped. That is power to attach conditions to patent grants for the purpose of protecting men against displacement” (*ibid*, 49).

mitigating the unemployment problem. Nevertheless, the problem might still exist because the number of jobs failed to increase as rapidly as the labor supply. So, in that case what could be done in order for the labor market to stabilize? Slichter answered to this question as follows: “An obvious suggestion is to reduce wages. But there is no machinery for doing this and it is difficult to see how such machinery could be constructed. Another alternative would be to stimulate the accumulation of capital...Unfortunately our apparatus for regulating the rate of capital accumulation is even less adequate than our apparatus for controlling wages, and there is small prospect that we shall soon be able to control the annual additions to capital” (*ibid*, 51).

Thus, Slichter suggested a policy of slight inflation as a more practical and applicable way to stabilize the labor market conditions. Although he recognized that the relief from the slight inflation policy was not so immediate, he criticized the alternative frequently suggested relief measure of working hours’ reduction, because he considered that reducing the hours of labor involves more problems than it ordinarily suspected (*ibid*, 51). In most cases, a reduction in hours of work should be accompanied by a rise in hourly wages as a compensation for the shrinkage of weekday time. Thus, Slichter asserted that the only way to destroy unemployment by converting it into leisure would be through a plan which permits industry simultaneously to achieve substantial savings in overhead (*ibid*, 53). Here again, the role of the federal labor board could be very substantial: “Its close and constant contact with the problems of technological unemployment would give it intimate knowledge of when and where cuts in hours were needed” (*ibid*, 53). The success of the board’s attempt depended on the special conditions of each industry. Namely, a cut in working hours would be easier in an industry where

the advance of technology enabled it to achieve substantial economies than in industries which faced the menace of competitive firms.⁹

5. Emil Lederer's Central Vision

In his works, Emil Lederer (1931, 1933) emphasized technical change as the distinguishing characteristic of the economic system. But why is technical change of great importance according 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 (Lederer, 1938, 89). Technical development is, thus, responsible for the ups and downs in production that are typical of our modern capitalist process (*ibid*, 90). He stressed 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” (*ibid*, 90).¹⁰

⁹ Slichter argued that trade unions could contribute to the mitigation or even the solution of the technological unemployment problem. Nevertheless, he held that, in fact, unions had not made serious attempts, so far, to combat technological unemployment. The most customary reaction of unions to technological changes was to attempt to protect their members against displacement by imposing restrictive rules and by opposing the installation of labor-saving devices. Slichter asserted that “unfortunately, after embarking upon a policy of opposition and restriction, unions find great difficulty in shifting to a policy of guidance and control” (Slichter, 1932, 44). Despite his strong criticism of the behavior of unions with respect to technological progress, he referred to two important achievements of some unions. The first was the fact that some unions assumed responsibility for organizing “the shifting of men from one part of the country to another”, reinforcing labor mobility and easing the burden of technological unemployment. The second achievement was the adoption of the seniority rule, “concentrating the burden of displacement upon the junior men, who, in most cases, are best able to shift to other occupations” (*ibid*, 45). Slichter believed that unions could contribute also in the implementation of other measures, as for example the cut of working hours. However, it seems that in general he did not trust trade unions and their incentives, and he was not so optimistic as far as their initiatives were concerned.

¹⁰ Lederer emphasized the dynamical character of capitalist economies and regarded technological change as the primary determinant of their evolution. In fact, Lederer formulated a theory of economic fluctuations which traced the cause of the boom period to the process of rationalization with respect to the use of labor (Lederer, 1925).

In his *Technical Progress and Unemployment* (1938) Lederer examined the effects of technical change on the labor market, carefully distinguishing between various forms of technical progress and analyzing their differing effects on the volume of unemployment. Already in his introduction, Lederer noted that he intended to examine “the influence of technical progress in stimulating as well as in retarding or arresting economic expansion” (Lederer, 1938, v). The importance of considering different kinds of technical progress had already been pointed out in Lederer (1933). There, the Austrian economist claimed that some erroneous analyzes in the technological unemployment debate should be attributed to the failure of their authors to make a distinction between different forms of technical change (Lederer, 1933, 4). Lederer proposed the taxonomy of technical progress into two broad categories: “inventions” and “rationalization” (i.e. cost-saving processes, in the narrow sense).

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 given that inventions lead to an expansion of the whole system of production and a parallel increase in the total purchasing power of the community (Lederer, 1938, 135)¹¹.

¹¹ Lederer’s analysis with regard to the introduction of “inventions” in the production process is apparently very Schumpeterian (Michaelides et al., 2009, 2010) and its roots could even be traced – indirectly - to the German Historical School, via Schumpeter’s influence (see Michaelides and Milios, 2009). Moreover,

“Rationalization” is the second type of technical change and the one that is responsible for the creation of technological unemployment. In Lederer’s work, “rationalization” signifies a general concept covering every cost-saving process (either capital-saving or labor-saving) leading to increased efficiency in production. In other words, rationalization includes both technical advances and improvements in organization¹². In contrast to the application of “inventions”, “rationalization” - and especially labor-saving technical improvements - do not ensure unhindered growth and the smoothness of the adjustment process cannot be ensured.

Lederer’s distinction between different types of technological change, closely related to the study of technological unemployment, undoubtedly constitutes one of his major contributions to the literature on technological change. His vision of the capitalist economy as a dynamic system is closely related to the significance he attached to technology and to his criticism of the concept of equilibrium. These aspects of his work shaped, to a great extent, his views on the issue of technological unemployment. In what follows, we will show that, according to Lederer, the effects of different types of technological change on the labor market and unemployment can be diametrically opposite.

For Lederer technological unemployment is the result of “rationalization”, and in particular of labor-saving technical improvements. He saw these technical improvements to be more closely linked with medium-term unemployment than “inventions”, as he regarded that the latter type of technological change – which practically leads to an expansion of existing production – “will not reduce the volume of employment but may even increase it temporarily during the period of actual investment” (Lederer, 1938, 25). More precisely, as inventions lead to general economic expansion, they should not be

according to Diebolt (2006), the deeper roots of several of Lederer's views could be traced back to Malthus (1836) and Sismondi (1827).

¹² Lederer notes that sometimes “the line of demarcation between technical progress and improvements in organization is very difficult to draw” (Lederer, 1938, 22).

held responsible for massive unemployment. On the other hand, labor-saving technical improvements may lead to protracted unemployment as there is no automatic adjustment mechanism which would ensure the re-absorption of redundant workers. In other words, technological unemployment is linked only to a specific type of technological change, namely “rationalization” with regard to the use of labor.

Lederer emphasized the effects of technical improvements as he considered this type of technological change to be dominant in his time: “technical progress is to-day concerned very largely with the solution of different problems, in particular that of cost reduction and only to a minor extent with the creation of new industries” (Lederer, 1938, 4). In contrast, inventions, and the subsequent emergence of new industries, dominated in the course of the nineteenth century, and as a result in that period there was a rapid rise in the volume of employment.

Furthermore, 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).

Lederer was clear about the existence of technological unemployment, induced by the introduction of labor-saving techniques and in *Technical Progress and Unemployment* engaged in a very 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 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 labor-saving technical improvements by which workers are displaced diminish the marginal productivity of labor and thus necessitate a reduction of wages (Lederer, 1938, 9).

His criticism to this line of thought rests also upon the social effects of labor displacement: “Economists 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, at least 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 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 sets in motion a lengthy process of adjustment, and it is not until the final stages of this process are reached that the rate of unemployment can be reabsorbed (*ibid*, 218)¹³.

Specifically, Lederer's approach consists in arguing that reintegration of displaced workers could not be ensured. Lederer assumed that production is predominantly governed by the law of increasing returns to scale. He linked this fact to the existence of unused reserves¹⁴ in most real-world situations and the resulting increase in marginal productivity when one of the factors of production is employed in greater intensity.

This departure from the mainstream orthodox approach, leads to completely different conclusions with regard to the re-absorption process of the displaced workers. It implies that, as a consequence of a labor-saving technical improvement, marginal productivity of labor has increased and thus the postulate of standard theory that a decrease of real wages (which equal the marginal productivity of labor) will bring about equilibrium in the labor market is no longer relevant. Lederer, thus, concluded that the failure of industry to absorb an extra quantity of labor and the observed unemployment signify the impediment to an expansion of production inherent in the capitalist system¹⁵.

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".

¹³ 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.

¹⁴ Lederer argued that "[i]t is not exaggeration to estimate that productive equipment is seldom used up to more than 80 per cent of its theoretical capacity" and supports his estimate by saying that "[h]ow large these reserves actually are was clearly seen during the war, when production was expanded with such amazing rapidity merely on the basis of the existing productive equipment" (Lederer, 1938, 240-1).

¹⁵ Lederer refers to two factors inhibiting expansion and full employment: (i) uncertainty regarding demand (ii) disproportionate expansion of the various branches of production (Lederer, 1939, 127).

Finally, Lederer also examined the implications of credit expansion with regard to the effects of technical improvements on unemployment (see also Gourvitch, 1940)¹⁶. The existence of elastic credit supply, a feature of modern capitalism, gives rise to the very intriguing question whether technical progress creates a new initial situation enabling employment capacity to be enlarged, which can be financed by recourse to extra short and long-term credit (Lederer, 1938, 233-4) and if, subsequently, technological unemployment can be avoided. Lederer's view is that credit expansion is only able to 'conceal' for a period of time, the ensuing unemployment. 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).

6. Slichter VS Lederer's Central Vision: A Comparison

In the previous sections we analyzed Emil Lederer's and Sumner Slichter's respective theses regarding the notion of Technological Unemployment. Their theoretical investigations in a great number of thematic areas were found to converge to similar views.

Analytically, the two economists tried to provide explanations for the apparent inability of the economic system to readjust and absorb the unemployed workers. Despite the fact that their respective analyzes differed in many aspects, they both attributed a central role to technical change and more specifically, to "labor-saving

¹⁶ Lederer thought that taking into account the effect of monetary factors, was an important extension compared to the work of previous authors on technological unemployment.

inventions” (in Slichter’s terminology) and to “rationalisation”/“technical improvements” (in Lederer’s terminology). Therefore, supply-side changes were held responsible for the protracted high rates of unemployment which ensued in the major industrial countries during the Great Depression.

In other words, both economists disputed the assertion of Say’s law that full equilibrium would be assured by the functioning of market forces. Their respective approaches thus constitute alternatives to the optimism of classical and neoclassical economists who foresaw swift readjustment and restoration of full-employment equilibrium. However, in contrast to other economists, who during the same period, disputed the validity of Say’s law emphasizing demand-side effects such as Keynes, Slichter and Lederer attached primary significance to the supply side of the economy and in particular the role of technical change.

Similarities also exist between Slichter and Lederer with regard to their general attitude towards technical change. From their writings, it seems that both authors had a rather cautious stance towards rapid technical change and its effects on the social formation. In this spirit, they both seemed to be in favour of restrained technological change which could be absorbed smoothly from the economic system. As we have seen, the dismissal wage was Slichter’s suggestion aiming at retarding the rapid technical change. On the other hand, Lederer examined the process of adjustment to labor-saving inventions in a planned economy and concluded that the possibility of affording to “produce temporarily at a loss” (Lederer, 1938, 16-19) would enable a planned economy to cope satisfactorily with the smooth introduction of technical changes. Also, Lederer’s favourable assessment of planned economies with regard to the absorption of technical change should be compared with Slichter’s remark that “the inability of the competitive system to effect an accurate balancing of costs and the benefits of change is perhaps the

strongest argument in favour of communism or some form of socialism” (Slichter, 1932, 41n).

Another interesting aspect of both economists’ investigations is their respective theoretical shift around 1930. In Slichter’s case it related to the significance of technical change in technological unemployment. More precisely, in his 1929 article, Slichter did not regard technical change as the crucial factor in unemployment problems, in contrast to his 1932 article, in which he emphasized the phenomenon of unemployment due to technological shifts. There, Slichter stressed the fact that technological progress can lead to permanent labor market malfunctions due to the existence of a rigid price mechanism¹⁷. Slichter retained in both articles an emphasis on the price system and especially on the role of price rigidities. However, in his second attempt, the ultimate cause of unemployment was technical change.

On the other hand, Lederer wrote two major works in 1931 and 1938, respectively, dealing with technological unemployment. In both these works, Lederer consistently emphasized the role of technical change on creating unemployment. The shift of Lederer’s thought towards supply-side explanations of unemployment becomes apparent when his works in the 1930s are compared to those of the 1920s and especially his *Konjunktur und Krisen* (1925) which provided a theoretical explanation of business cycle 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) arguing that: “Almost all the cycle theories agree about the nature of these disturbances—they are disproportionalities” (1925, 156).

¹⁷ Slichter’s insistence on the relevance of wage rigidities for producing permanent unemployment does not appear a very plausible explanation of empirical facts. In fact, Keynes had noted the incompatibility of this empirical finding in his *General Theory*.

The important point to note is that Lederer's analysis in 1925, focused exclusively on the role of demand while no reference of technological change was made.¹⁸ In contrast, during the 1930s Lederer gave emphasis on the significance of technological change aiming at explaining the high rates of unemployment observed in the major industrial countries. It is clear that the analyses of that period pointed out to supply-side factors and in particular on technical change, as the ultimate cause of unemployment. Lederer carefully distinguished between different types of technical change and regarded that cost-saving improvements constituted its dominant form. He argued that this type of technical change led to a protracted adjustment process until the displaced workers finally get redeployed. Of course, he stressed the absence of an automatic adjustment mechanism as promised by the theoreticians of the 'laissez faire' School.

A very obvious explanation for their respective shift around 1930, common to both economists, might be the disastrous consequences of the Great Depression, which induced both theoreticians to "rediscover" alternative causes of the high unemployment rates, apart from the already noticed, at that time, cyclical and seasonal factors.

Of course, it is important not only to delimit our analysis to some striking similarities, but to also stress a major difference between the two theoreticians. Lederer, in contrast to Slichter, did not attach increasing attention to price stickiness in order to explain the failure of the economic system to reintegrate displaced workers. Instead, he focused on the existence of unused capital reserves and the characterization of the production process by increasing returns to scale. These modifications to the standard

¹⁸ Lederer traced the initiation of the boom period 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 as an essential component of this 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) describes Lederer's vision of the business cycle as demand-driven and assigns the leading role to classes with fixed incomes, the purchasing power of which increases during the crisis phase. Allgoewer (2003) regards 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).

orthodox analysis, led him to conclude that the main obstacle to full re-absorption was the impediments to capitalist expansion.

Technological unemployment was not only a temporary phenomenon, since the existence of significant rigidities in the economy and in the labor market, meant that the re-absorption process could not proceed smoothly. Thus, people who lost their jobs due to the introduction of new labor-saving techniques could not easily find a new job position, despite a possible diffusion of new technology and an increase in the production capacity and output. One of the principal reasons for that phenomenon was rigidities, mainly in the form of price maladjustments.

In general, Slichter, just like other contemporary analysts, emphasized the significant role of the price system¹⁹, irrespective of whether technical change was the underlying cause of high unemployment or not. In this context, Edna Lonigan, a few years later, criticized the term “technological unemployment” contending that “if prices and investment are not functioning soundly, that is not technological but price unemployment. It would be better if it was called ‘price unemployment’ to indicate its real origin” (Lonigan, 1939, 251).

7. Conclusion

This paper analyzed Emil Lederer’s and Sumner Slichter’s central visions based on the concept of Technological Unemployment. Given the presence of central elements of Emil Lederer’s ideas on the Debate on Technological Unemployment, it is surprising that so little attention has been paid to Lederer’s writings in general, and in particular to the ones focusing on technological unemployment as an intellectual source for the discussion

¹⁹ For example, Alvin Hansen (1932, 26) held that “there is no assurance that the displaced labor will, in all cases, be reabsorbed unless we assume a flexible economic structure; that is to say, a flexible system of prices and wage-rates”

on the Debate. This essay showed that after a careful examination of their writings, their theoretical investigations in a great number of thematic areas seem to converge to similar views. Despite some obvious differences between Lederer and Slichter, the parallels are impressive, and the matching of certain concepts undeniable.

Analytically, both economists, attempted to explain the apparent inability of the economic system to readjust and absorb the unemployed workers. Moreover, both economists disputed the assertion of Say's law that full equilibrium would be assured by the functioning of market forces. In contrast to other economists, they both attached increased significance to the supply side of the economy and in particular to the role of technical change. Furthermore, both authors were in favour of restrained technological change which would be absorbed smoothly from the economic system. Another interesting aspect of both economists' investigations is their respective theoretical shift around 1930 which could be attributed to the disastrous consequences of the Great Depression.

At this point, one must face an interesting issue: *why is the systematic study of Lederer's contribution on technological unemployment neglected in the relevant literature, whereas other influences are persistently stressed?*

In our view, it is because after World War II, most German-speaking economists went into an eclipse partly because of the 'mathematisation' of *Economics* (Reinert, 2002). As a consequence, German economics was represented by Marx and Schumpeter. Meanwhile, the decline of German reduced the influence of Lederer's writings in German. More precisely, about the 1850s, as we know, German established itself as one of the leading languages in *Science* and *Economics*. However, the importance of German declined after World War I and it was no longer required in most PhD programs around the world. In simple words, the absence of Lederer (and other German-speaking economists) in the Anglo-Saxon literature is the product of this situation.

As a result, we believe that most Anglo-American economists would be surprised by an approach that describes a large part of Slichter's ideas on technological unemployment - i.e. "probably the best-known economist in America at the peak of his career" (Dunlop, 1961, Preface) and "perhaps the most influential industrial economist in America" (University of California Committee on Academic Freedom, 1951, 22) – as a reworking of the neglected Austrian economist's *oeuvre* Emil Lederer, who was his senior by ten years.

Here, it is interesting to note that - as the available material demonstrates - Slichter was apparently well acquainted with the German language and he was, thus, able to read Lederer's works in German, as his one-year stay in Munich studying towards his PhD implies, at a University where Lederer had received his own PhD a few years ago (1911). After all, there is no doubt that "There are different kinds of debt that a young economist incurs in the course of his education and apprenticeship. Some are personal, accumulated through receiving mentoring, friendship and academic patronage, and some are intellectual, accumulated through inspiration, intellectual guidance and assimilation of the other's ideas" (Toye, 2006, 830).

This connection between Lederer and Slichter may be very useful for promoting dialogue between different strands of thought and for understanding current economic issues. Clearly, future and more extended research on the subject would be of great interest. For instance: what was the background of the famous Debate on Technological Unemployment, what stylized facts were the basis of the discussion, in which form did Slichter and Lederer "participate" in this debate, to which extent did they shape the debate / influence other participants, etc. Furthermore, did Slichter and Lederer influence significantly each other, do their respective analyses have common routes, structures etc.? Clearly, future work on the subject would be of paramount importance.

References

- Allgoewer, E. (2003), "Emil Lederer: Business Cycles, Crises, and Growth." *Journal of the History of Economic Thought* 25.3: 327-348
- Backhouse, R. E. (1997), "Review of the Technological Unemployment and Structural Unemployment Debates by Gregory R. Woirol." *Journal of Economic Literature*, 35 (December): 2075-2076.
- Berkeley, U. C. (1951), "The consequences of the Abrogation of Tenure: An Accounting of Costs." Feb. 1, *University of California (System). Committee on Academic Freedom*, Bancroft Library: James Ralston Caldwell Papers.
- Christenson, C. L. (1961), "Review of Potentials of the American Economy: Selected Essays of Sumner H. Slichter by Sumner Slichter; John T. Dunlop." *American Economic Review*, 51.4 (September): 671-674.
- Dickler, R. A. (1981), "Emil Lederer und die moderne Theorie des wirtschaftlichen Wachstums.", Nachwort zu Emil Lederer: *Technischer Fortschritt und Arbeitslosigkeit. Eine Untersuchung der Hindernisse des ökonomischen Wachstums*. Frankfurt am Main: Europäische Verlagsanstalt: 263-327.
- Dickler, R. A. (1983), "Lederer's Theorie der strukturellen Arbeitslosigkeit und lange Wellen." in Hagemann, H. and P. Kalmbach (eds), *Technischer Fortschritt und Arbeitslosigkeit*, Frankfurt am Main: Campus Verlag: 186-203.
- Dickler, R. A. (1987), "Lederer, Emil" in Eatwell, J., Milgate, M. and P. Newman (eds), *The New Palgrave. A dictionary of economics*, Vol. 3: 157-158.
- Diebolt, C. (2006), "Progrès technique et cycles économiques dans la pensée allemande de l'entre-deux-guerres: l'apport d'Emil Lederer." *Association Française de Cliométrie* Working Paper 9.

- Dorfman, J. (1969) [1959], *The Economic Mind in American Civilization*. Volumes Four and Five, New York: Augustus M. Kelley.
- Dunlop, J. T. (1961), *Potentials of the American Economy: Selected Essays of Sumner Slichter*, Harvard University Press.
- Dunlop, J. T. (1987), Slichter, Sumner Huber, in Eatwell, J., M. Milgate and P. Newman (eds.), *The New Palgrave: A Dictionary of Economics*. London: Macmillan, 2: 864-866.
- Esslinger, H. U. (1997), "Einflüsse der Emigrationserfahrung auf Emil Lederers wirtschaftstheoretische und soziologische Arbeiten", in: Hagemann, Harald (ed.) *Zur deutschsprachigen wirtschaftswissenschaftlichen Emigration nach 1933*. Marburg: Metropolis Verlag: 353-381.
- Esslinger, H. U. (1999), "Lederer, Emil Hans" in: Hagemann, Harald and Claus-Dieter Krohn (eds) *Biographisches Handbuch der deutschsprachigen wirtschaftswissenschaftlichen Emigration nach 1933*. München, Saur: 354-362.
- Garraty, J. A. (1978), *Unemployment in History: Economic Thought and Public Policy*. New York: Harper & Row.
- Goldberg, J. P., and W. T. Moyer (1985), *The First Hundred Years of the Bureau of Labor Statistics*. U.S. Bureau of Labor Statistics, Bulletin 2235, Washington, D.C.: GPO.
- Gourvitch, A. (1940), *Survey of Economic Theory on Technological Change and Employment*, New York: A. M. Kelley, 1966.
- Haberler, G. (1950), "Joseph Alois Schumpeter: 1883-1950.", *Quarterly Journal of Economics* 64: 333-72.
- Hagemann, H. and P. Kalmbach (eds) (1983) *Technischer Fortschritt und Arbeitslosigkeit*. Frankfurt am Main: Campus Verlag.

- Hagemann, H. (1997), “Zerstörung eines innovativen Forschungszentrums und Emigrationsgewinn. Zur Rolle der “Kieler Schule” 1926-1933 und ihrer Wirkung im Exil.” in: Hagemann, Harald (ed) *Zur deutschsprachigen wirtschaftswissenschaftlichen Emigration nach 1933*. Marburg: Metropolis Verlag: 293-341.
- Hagemann, H. (2000), “Emil Lederer (1882-1939): Economical and sociological analyst and critic of capitalist development.” in: Koslowski, P. (ed) *The theory of capitalism in the German economic tradition. Historism, Ordo-Liberalism, Critical Theory, Solidarism*. Berlin: Springer: 26-51.
- Hagemann, H. (2004), “The German Historical Approach to Economics”, *Research in the History of Economic Thought and Methodology* 22-A: 399-411.
- Hagemann, H. (2005), “Dismissal, Expulsion and Emigration of German-speaking economists after 1933”, *Journal of the History of Economic Thought* 27, 4: 405-420.
- Hansen, A. (1932), “The Theory of Technological Progress and Displacement of Labor.” *American Economic Review* Supplement, Papers and Proceedings of the Forty-fourth Annual Meeting of the American Economic Association 22.1 (March): 25-31.
- Johnson, A. (2000), Memorie, in M. Salvati (ed.) *Da Berlino a New York*. Milan: Bruno Mondadori, 231–40.
- Kaldor, N. (1932), “A Case against Technical Progress?”, *Economica* 36 (May): 180-196.
- Lederer, E. (1925), “Konjunktur und Krisen”, in *Grundriss der Sozialökonomik*. Tübingen: J.C.B. Mohr. 354–413.
- Lederer, E. (1930), “Ort und Grenze des zusätzlichen Kredits.”, *Archiv für Sozialwissenschaft und Sozialpolitik* 63.3: 513-522.
- Lederer, E. (1931), *Technischer Fortschritt und Arbeitslosigkeit*. J.C.B. Mohr, Tübingen.
- Lederer, E. (1933), “Les progrès techniques et le chômage.” *Revue Internationale du Travail* XXVIII.1: 1-26.

- Lederer, E. (1936), "Developments in Economic Theory." *American Economic Review*, Supplement, Papers and Proceedings of the Forty-eighth Annual Meeting of the American Economic Association 26. 1 (March): 151-160.
- Lederer, E. (1938), *Technical Progress and Unemployment*. Geneva: King and Son.
- Lederer, E. (2006), "On the Sociology of World War." *Archive of European Sociology* XLVII.2: 241-268.
- Lederer, E. and Lederer-Seidler, E. (1938), *Japan in Transition*. London: Oxford University Press.
- Leeson, Robert (1997), "Influence (or the Lack of It) in the Economics Profession: The Case of Lucien Albert Hahn." *History of Political Economy* 29. 4 (Winter): 635–638.
- Lonigan, E. (1939), "The Effects of Modern Technological Conditions on the Employment of Labor." *American Economic Review* 29. 2 (June): 246-259.
- McCraw, T. K. (2007), *Prophet of Innovation: Joseph Schumpeter and Creative Destruction*, Cambridge, Mass: Harvard University Press.
- Malthus, T. R. (1836), *Principles of Political Economy Considered with a View to Their Practical Application*. London: W. Pichering.
- Michaelides, P. and Milios, J. (2005), "Did Hilferding Influence Schumpeter?". *History of Economics Review* 41: 98-125.
- Michaelides, P. and Milios, J. (2009), "Schumpeter and the German Historical School." *Cambridge Journal of Economics* 33. 3: 495-516.
- Michaelides, P., Milios., J., Vouldis, A. and Lapatsioras, S. (2009), "Emil Lederer and Joseph Schumpeter on Economic Growth, Technology and Business Cycles." *Forum for Social Economics*, published online February 15, 2009, DOI: 10.1007/s12143-009-9032-2 (*in Press*).

- Michaelides, P., Milios, J., Vouldis, A. and Lapatsioras, S. (2010), "Heterodox Influences on Schumpeter." *International Journal of Social Economics* 37. 3: 197-213.
- Milios, J., Dimoulis D. and Economakis, G. (2002), *Karl Marx and the Classics. An Essay on Value, Crises and the Capitalist Mode of Production*. Ashgate, Aldershot.
- Mongioli, G. (2005), "Émigré economists and American neoclassical economics 1933-1945", *Journal of the History of Economic Thought*, 27. 4: 427-437.
- Moszkowska, N. (1935), *Zur Kritik moderner Krisentheorien*. M. Kacha: Prag.
- Reinert, E. (2002), "Schumpeter in the Context of two Canons of Economic Thought." *Industry and Innovation* 6. 1: 23-39.
- Rutherford, M. (2006), "Wisconsin Institutionalism: John R. Commons and His Students." *Labor History* 47. 2 (May): 161-188.
- Schumpeter, J. (1954), *History of Economic Analysis*. Oxford University Press, New York.
- Senn, P. (2003), "The Influence of Schumpeter's German Writings on the Mainstream Economic Literature in English." in Backhaus, J. *Joseph Alois Schumpeter*. Kluwer Academic Publishers, The Netherlands, 141-162
- Shionoya, Y. (2005), *The Soul of the German Historical School*, New York: Springer.
- Sismondi, L. S. (1827), *Nouveaux principes d'économie politique*. Delaunay: Paris.
- Slichter, S. H. (1929), "Market Shifts, Price Movements, and Employment." *American Economic Review*, Supplement, Papers and Proceedings of the Forty-first Annual Meeting of the American Economic Association 19.1 (March): 5-22.
- Slichter, S. H. (1932), "Lines of Action, Adaptation, and Control." *American Economic Review*, Supplement, Papers and Proceedings of the Forty-fourth Annual Meeting of the American Economic Association 22.1 (March): 41-54.

Toye, J. (2006), "Hans Singer's debts to Schumpeter and Keynes." *Cambridge Journal of Economics* 30. 6: 819-833.

Woirol, G. R. (2006), "New Data, New Issues: The Origins of the Technological Unemployment Debates." *History of Political Economy* 38.3: 473-496.