【Article】

Business Cycles in Juglar and Schumpeter*

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Abstract :

Clément Juglar (1819–1905) was credited by Joseph Schumpeter as the founder of modern business-cycle theory. Schumpeter praised Juglar for identifying the cyclical character of economic fluctuations and for having been seminal in the combination of theoretical, statistical and historical analysis, and also named the classical business cycle after the French economist. Strikingly, the latter's pioneering work is hardly known today. The paper reexamines Juglar's explanation of cyclical fluctuations and compares it with Schumpeter's one. One important difference is that for Schumpeter the classical business cycle is driven by technological innovations of medium size, whereas for Juglar the cause for an overheated boom is speculation fuelled by easy credit.

JEL classification numbers : B 1, B 31, E 32.

I Introduction

Clément Juglar (1819–1905)[1] was ranked by Joseph Schumpeter in his *History of Economic Analysis* "as to talent and command of scientific method, among the greatest economists of all times" (1954, 1123). It is surprising to notice that despite the numerous honors Juglar received,[2] one cannot recognize that he had many followers among his academic contemporaries[3] nor could he be considered as the founder of a "school of thought"[4] before Schumpeter acknowledged him as an outstanding economist. Nowadays Juglar's name is famous mainly because of the so-called *Juglar cycles*, but his contribution should deserve more attention.

The theory developed by Juglar is highly original and more complete than often supposed. Particularly his analysis of speculative behavior, its emergence, diffusion and impact make his analysis very modern. Concerning the core of his business-cycles approach, the decisive factor for Schumpeter's assessment is Juglar's diagnosis of the nature of depression, *i.e.* that "the only cause of depression is prosperity" (Schumpeter 1954, 1124). Schumpeter credited Juglar for identifying the cyclical character of economic fluctuations and for having been seminal in the combination of

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theoretical, statistical and historical analysis. He attributed to Juglar "the discovery that what the former generations had called 'crises' were no disconnected events but merely elements in a more deep seated wave-like movement. The crises are nothing but turning points from prosperity into depression, and it is the alternation between prosperity and depression which is the really interesting phenomenon." (Schumpeter 1931, 6) Juglar's great merits therefore lie in pushing the crisis into the background and placing the problem of the cycle into the focus of attention instead.[5)]

The purpose of this paper is to examine the nature and method of Juglar's contribution to business cycle theory and then to contrast it with Schumpeter's analysis of cyclical fluctuations. There are important similarities but also evident differences between the two authors : for Schumpeter the classical business cycle is driven by technological innovations of medium size, whereas for Juglar the cause for an overheated boom is speculation fuelled by easy credit. A closer investigation can nevertheless reveal the richness of Juglar's business cycles approach and then provide original benchmarks for a more detailed comparison between those two business cycle theories. Indeed, Juglar, without having provided a complete theory of business cycles, proposes a very original and interesting approach. In a specific economic context characterized by both industry and trade's rapid development, Juglar interconnects new markets development, speculative investments, credit creation, and banks' behaviors over the cycle. The way money, credit and industrial development interact and finally create business cycles is quite different in Juglar's view compared with Schumpeter's theory of economic development but does not express a contradiction.

In section II we concentrate on the analysis of Juglar's scientific method combining a systematic use of statistics, historical analysis and theoretical considerations. We discuss how his method strongly mirrored the economic view he developed on the origin and dynamics of business cycles. We explore the distinction Juglar introduces between monetary and commercial crises, the role of the banking system and then we investigate the anatomy of the cycles developed by Juglar. A particular emphasis is given to Juglar's comments on speculation in order to enlighten the relation between credit cycles and business cycles. Section III summarizes Schumpeter's main ideas of the business cycle in the light of Juglar's contribution with which it is compared. In the final section IV we highlight the importance and essential elements of Juglar's analysis of business cycles in confronting it with the resonance it received in the works of pioneers of modern business-cycle theory at the last turn of the century and thereafter, such as Mikhail Tugan-Baranovsky, Knut Wicksell, Arthur Spiethoff, Wesley Mitchell and others.

II　Juglar's Approach to Business Cycles

Juglar's analysis of periodic crises has been recognized as a prominent contribution to business cycles because his approach was based on the idea that crises are rooted in the prosperity period. More precisely, it is the credit cycles animated by speculative behavior that is at the origin of the alternating periods of crisis and prosperity. Without arguing explicitly that crises are strictly positive, Juglar shares with Schumpeter the idea that they cannot be avoided, representing a mechanism of adaptation of the economic system and, in that sense, they then can be seen as having a positive function.

Such a position led Juglar to become an opponent to most of the views largely spread in the academic area of his period.[6] Juglar was among the first to call for an economic theory of the cycle. He really appeared as a founder of the modern business cycles approach, when he decided to write an essay "to investigate the causes and to signal the effects of commercial crises which occurred in Europe and the United States during the nineteenth century." That challenging question was asked by the Academy of Moral and Political Sciences[7] which had decided to hold a competition on that issue. Juglar participated and won the price for "*Des crises commerciales et de leur retour pĕriodique en France, en Angleterre et aux Etats-Unis*," published in 1862.[8] His success resulted from his method of economic analysis intertwining historical facts, statistics and economic theory[9] as well as from his very modern monetary theory. He considered that only such a method could provide an *objective* view and confronting systematically theories and facts, he contradicted many of the widespread theoretical analyses of crises. Juglar defined Political Economy as a science of observation, with an international scope and with the aim to answer to a social question. He always started from observations, and rapidly he was in quest of understanding the origin(s) of periodic crises: "The more we observe commercial crises ..., the more we are convinced that their movement, their accidents are more and more synchronized." [10] That empirical observation led Juglar to consider that to look for specific causes or circumstances, would be misleading because none of the various causes could explain the periodicity or the synchronization observed in the fluctuations of the economic activity. The role of "causes" — which could be understood here as shocks or specific circumstances — is not denied by Juglar but can only be of secondary importance. "Similarity and simultaneity of this movement in France and in England indicate that it is in nothing peculiar or local, it is not under the influence of institutions or laws of the country." (Juglar 1863, 5) Logically, Juglar claims for a purely theoretical explanation strongly based on a large scope of observations and data.

1. First Principles of an Endogenous Business Cycles Approach

One cannot say that Juglar really produced a complete theory[11] but nevertheless his contribution was original for the period and is still largely unknown. As most of his contemporaries, Juglar was convinced that the development of capitalism was the source of the regularities observed in fluctuations. Like in Schumpeter's contribution, capitalism creates instability which is seen as a necessary element, *i.e.* the natural and unavoidable counterpart of the development of capitalism. In Juglar and Schumpeter's views crises are only of a temporary nature, and although one has to regret their damages, one must realize that one cannot avoid them.

A specificity of Juglar has been nevertheless to provide a distinction between the *origin* and the *causes* of business cycles. What he calls "origin" refers in fact to the fundamental nature of economics; logically this means that, contrary to many economists of that period, Juglar's objective clearly consists in providing an endogenous explanation of business cycles.

Schumpeter shared with Juglar the emphasis on the alternation of *prosperity* and *depression*.[12] This comes out very clearly in the title of the seminar "The Wave-like Movement of Economic Life" at Harvard University in early 1914 in which Schumpeter (1914-15) presented the main ideas of his opus magnum *The Theory of Economic Development*. In his *History of Economic Analysis,* he later gave highest credit to Juglar for connecting the two phases of the cycle and for identifying the prosperity phase as the decisive cause of depression :

> "In themselves, most of his suggestions concerning factors that bring about the downturn (loss of cash by banks, failure of new buying) do not amount to a great deal. But all-important was his diagnosis of the nature of depression, which he expressed with epigrammatic force in the famous sentence : 'the only cause of depression is prosperity.' [13] This means that depressions are nothing but adaptations of the economic system to the situations created by preceding prosperities and that, in consequence, the basic problem of cycle analysis reduces to the question what is it that causes prosperities — to which he failed, however, to give any satisfactory answer." (Schumpeter 1954, 1124)

Juglar did not have the idea of productive recessions as it was later developed by Schumpeter. Juglar considers that the crises (recessions) are a part of the natural movement of economic development. If they have a positive effect on economic activity it is not because they are "productive" but because they allow for a kind of natural selection : only the sound firms and banks will survive the crisis. This selective function of the crisis has been pointed out later also by Schumpeter and Sombart.[14] Like Juglar they both believed that not only the upswings but also the crises are beneficial from an evolutionary perspective of capitalist development. Despite the low, or in worse cases even negative growth rates, the recession periods thereby contribute to the long-run growth of the whole economic system. There is no possible industrial development without crisis. But for Schumpeter and Sombart, recession also forces capitalists to improve their organisation and to introduce new technologies to survive which subsequently are the main means to overcome the recession.

For Juglar the best we can do is to try to understand those crises, to forecast them and perhaps to accelerate their process in order to regain prosperity as soon as possible, but in any case it would be unreasonable to think we could or should avoid them.

> "It is already a lot to know the nature and the origin of the disease, a modification of the system is not enough in order to eliminate them, it only depends on the experience and intelligent activity of the ones who are in charge of the credit institutions, to restrict or to dampen their negative outcomes." (Juglar [1862] 1889, 13)

Schumpeter (1931) defends a similar position in his lecture delivered at the Imperial University of Tokyo on January 30th, 1931 in which he focuses on Juglar cycles, when he underlines that the objective is to understand cycles and that "Inferences as to remedies and policies are much less important." (*ibid*., 18)

2. From the Intuition to the General Approach : the Emergence of a Scientific Method

The scientific method of Juglar has been praised by Schumpeter (1954, 1123) who contributed a lot to his success: "The great feature about this is the almost ideal way in which "facts" and "theory" are made to intertwine." In his article "*Le rôle de la statistique au point de vue historique et au point de vue économique*" Juglar (1898) reassessed clearly the importance of statistics for economics: for Juglar they can only reveal the "true interpretation" of the facts, *i.e.* that they allow to discriminate between different opinions on the same facts.[15] In that perspective, economists have to concentrate on long series data.[16] They have to identify the general movements of exchanges, which represent the "life of the nations." Juglar, who was aware of the problem of heterogeneous data among countries, never chose to analyze the quantities exchanged as an indicator but only analyzed the *movements* of those exchanges. Using statistics, history and theory, the aim of Juglar was to provide a general economic analysis. Considering only the minimum and the maximum value of the variables observed for each period, Juglar avoids taking into account temporary variations, purely associated with the changes in the economic situation.[17] Juglar finds in the constant repetition of the same incidents in France, England and the United States, the best scientific support of his view. One should also note that among his French contemporaries Juglar's method was appreciated and did not face the resistance other scientific approaches of political economy had, because he defended in fact a practical approach which is very much compatible with the liberal view.[18]

3. Nature of the Crises, Origins and Periodicity

In the introduction to his 1863 article,[19] Juglar denounces the amalgam between commercial and monetary crises which is very often propagated. A *commercial* crisis is a business disturbance followed by discredit, depreciation of goods, suspension of business, bankruptcies, and problems for the credit houses most committed to fragile investments. *Monetary* crises are identified by a decrease in the metallic reserve and normally can be overcome by the satisfaction of temporary needs in currency. In general those movements are not rare, they are characterised by a simple diminution of cash and a small increase of the discount rate. They are not responsible for serious business disturbances. In fact, they are so temporary that Juglar considers them much more as periodical adjustments rather than actual crises. It is only when the demand for discount is accelerated and drags on rapidly the metal currency that the fear arises that bank notes could cease to be reimbursed. Then the discount rate is increased, the falling dues are reduced, and the credit disappears. In that case one can really say that there is a monetary crisis which nevertheless is dominated by a commercial crisis. Commercial crises are then the more important ones.

Looking for common characteristics of countries like France, England and the United States, which could explain correlated movements, Juglar's analysis concludes that credit and its expansion represent a *prédisposition*, i.e. specific circumstances necessary for crises to develop.[20] If payments could be made only by cash, there would be no possibility for crises to arise, only for brief (monetary or liquidity) adjustments:

> "Formerly ... there was, and there still are, troubles but since credit was almost unknown, we did not experiment terrible suspensions which carry everything away in their fall restabilising the equilibrium of

> prices by an overshooting reaction ... In England, it is mainly since (the credit) intervention that crises became more regular. We then understand how cash payments cannot produce them (crises)." (Juglar 1863, 3)

This argument is consistent with the increasing synchronization of business cycles observed among industrialized countries. One may notice that the faster growing countries can expect to become more and more unstable, since credit expands when activity develops. "Crises only appear among nations whose trade is very much developed. Where there is no division of labor, no external trade, internal trade is more secure, the more credit is reduced, and the less we have to be afraid." (*ibid*., 5)

Juglar explains that credit stimulates certain behaviors which finally lead to speculation. Credit gives the opportunity of enthusiasm to (excessively) increase and it is that excess of enthusiasm which becomes speculation, what Juglar also considers as credulity. Since enthusiasm contributes to growth or at least reinforces growth, it nevertheless becomes difficult to distinguish a speculation-based expansion from a development-based expansion.

There clearly exists the idea that agents become more and more optimistic or enthusiastic over the phase of prosperity and if such an enthusiasm could be "translated" into investment, it is because credit is available. Juglar then explains that during the prosperity phase, agents' decisions are driven by the nominal expected value of capital on financial market quotation and not by outcome or wealth. It seems that Juglar is referring here to both agents intervening on financial markets (with the reference to market quotation) and also investors following the leading ones and adopting the same production strategy as the pioneering entrepreneurs. Those imitators are then responsible for overproduction.

Logically, Juglar notices that "the severity of crises is directly linked to the development of the country's wealth" (*ibid*., 14). Then, the richer a country and its agents are, the more they have a tendency to over-invest, and the more severe the crisis will be.

4. The Ambivalence of the Banking System

Although banks contribute to cycle dynamics, Juglar does not consider that they are responsible for it.[21] The problem is not an excess of monetary emission but the excess of credit, what he calls the "abuse of credit." Juglar explains that the efforts banks are tempted to make in order to keep the discount rate stable, are crazy. The rise of the discount rate is only the sign of but not the cause of the disease. The real problem comes from the distorted proportion between capital and credit, the variation of the discount rate being the expression of the correction of such a distortion. That distortion is analyzed by Juglar as the result of a misallocation of credit to projects which cannot be profitable (enough). He has the idea that credit can artificially maintain or support investment projects: "The permanent increase of prices during the preceding years, replaced by a rapid decrease, stops the whole businesses which were based on credit their main support." (Juglar 1863, 7)

One must notice that the origin of the distortion is never a "metallic issue" but the outcome of speculation. Because capital and credit represent the two means of circulation, should be kept a certain proportion between their respective quantities. An increase of circulation which would not be associated with an increase of capital only leads to the reduction of what Englishmen call "currency." [22] In that sense, Juglar does not imagine that banks could prevent crises since they cannot be responsible for the speculative behavior of agents. One could perhaps only expect that they could dampen excessive investments being more aware of macroeconomic contexts and effects that agents are not capable to predict.

5. From Credit Cycles to Business Cycles : Capital Absorption and Oscillations between Confidence and Distrust

In 1862/63 Juglar identifies speculative behavior as the link between credit cycles and business cycles, but amplified by a collective dimension : the contagion effect. However, Juglar does not have any individual approach, *i.e.* microfoundation, of agents' behaviors. He explains that speculation is natural but that it can lead to a real overheating. More precisely, Juglar's sequence is the following : there is a natural speculation motive, which by a collective enthusiasm provokes an excess of speculation (*i.e.* investment projects are then artificially maintained by credit, there is bad evaluation of profitability possibilities). Such an over-speculation has two effects : first it generates a sort of financial bubble, and second it absorbs capital which propagates embarrassment among investors. We can develop that sequence.

Speculation. Juglar explains that speculation is a natural behavior which becomes a problem only in its excess, *i.e.* when agents cease to decide about their investments depending on their effective revenues or wealth, but rather begin to calculate investment projects on the value of firms' stocks :

> "The impulse given to work is such that, during years, the raw materials are just sufficient for plants, importations and exportations increase continuously, and suddenly, all the channels seem to be full, there is no more selling, circulation stops and crisis occurs ; all speculations are interrupted, money so abundant months before decreases, reserves disappear and even if call for funds continue, they cannot meet their offer, floating values come to the market : depreciation of all the values, necessity to sell in bad conditions. Those splits, those excesses of speculation, are too much in the human nature to be prevented by another measure." (Juglar [1862] 1889, 7)

Juglar does not conclude that speculation and credit are fatal, because they are also responsible for growth, and periods of growth are longer and more profitable compared to crises.[23]

Collective enthusiasm. Juglar underlines that during the prosperity period exchanges are always easy, in every hand products circulate, they let benefit : from that a collective craze emerges, enthusiasm which is not satisfied enough by the natural increase of activity, and provokes an artificial movement (Juglar 1886, 5). That mechanism lasts as long as investments meet new investors. When this is not possible anymore, available capital and credit are sold out, and the crisis spreads. One must notice that Juglar's investors are not able to forecast that the "channels will be full" (*ibid.*). In other words, they do not anticipate the fact that if every individual invests massively there will be finally an "obstruction" of the markets, *i.e.* a kind of bottleneck effect. Those missing agents' expectations are responsible for the regular overheating and then, for the systematic correction implemented both via a natural credit regulation.

Capital absorption effect. The capital tied up in investments is in some sense the victim of what Juglar calls the absorption issue. That phenomenon provokes chain consequences and then propagates financial embarrassment. "The issue[24] would be much more capital absorption than speculation : during crises, we are missing capitals, we even believe that we should increase creation." Juglar in 1901 also regrets that good investment projects sometimes are badly allocated, *i.e.* in hands which could not hold them without using credit intensively. Then they are negatively affected by credit crushes, not because those projects should have not been financed, but because they were dependent on investors who themselves were engaged in other and perhaps bad investment activities. One can qualify such a mechanism as a financial contagion process.

We can interpret Juglar's theory as based on speculative behavior but also on a contagion phenomenon acting, by definition, at a collective level. The fact that agents are not able to extrapolate collective consequences of their individual decisions leads to regular overheatings, provoked by over-investment. Those agents then are at the origin of an endogenous variation of credit, profit and activity level depending on the confidence (or distrust) they have in the future. The different and interrelated phases of the cycle can be seen as the outcome of a pure credit adjustment or as permanent oscillations of the system between confidence, credulity and then distrust.

6. The Anatomy of the Crisis and the Role of Liquidation

The different phases of the cycle are analysed through the evolution of central bank data, mainly discount-bill portfolios, metal reserves and prices. One can describe the cycle as follows. In a period of prosperity prices are rising, the quantity of discounted bills held by banks increases and the metallic reserves decrease. At that stage, crisis looms. When the crisis occurs it is suddenly and at the moment when prices are at their peak, *i.e.* prices stop rising. This increase in prices has financial but also real consequences. On the financial side it means that borrowers try to discount their bills to meet their repay ment schedules, thereby increasing the bank portfolios dramatically. The metallic reserves decline dangerously. The banks are forced to raise their lending rate and finally stop delivering additional credit. On the real side, Juglar clearly explains that the rise of prices creates the dynamics of the crisis : prices increase driven by (over-)enthusiasm until there are less buyers than sellers : here is the crisis. Juglar questions that fact wondering himself whether such a phenomenon is due to the price increases or due to an excess of production (1891, p. 641). After rejecting Say's law in 1863, Juglar in 1891 shades his view : in a period characterized by the expansion of the wealth of the nations, the decrease or absence of needs by the populations cannot be seriously taken into account ; people can only be limited by the increase of prices. Such a movement is explicitly driven by speculative behaviors ([1862] 1889 and 1863). In later writings, without denying the role of speculation, Juglar better documents a kind of endogenous dynamics of prices.[25]

A *liquidation* phase begins : fire sales are necessary and deflation occurs, provoking chain bankruptcies. Confidence disappears and business crashes. "The slowdown of the liquidation period is a reaction to the prior overheating. Stagnation is necessary for recuperation. The combination of low prices and reduced interest rates becomes the starting point for recovery." (Ducos 1997, 346) The logical sequence consists of the three phases, *prosperity*, *crisis* and *liquidation*, each phase being the product of the preceding one and generating the next one. Prices will continue to fall during the liquidation phase until they become low enough to stimulate an increase of demand, an increase of prices, and then again another similar process of overheating develops.[26] Then liquidation is the natural reaction of the system to an overheated phase. As Juglar expresses himself, it is a purge : "(...) a crisis is only a general liquidation in order to allow businesses to restart on a sound basis, and not on the basis of a too tight credit, that accumulated charges will finally break." (Juglar 1863, 5)

The consequence of liquidation is a sounder economic system, *i.e.* banks and firms which were too committed in risky businesses do not survive the crisis, whereas the sound houses of credit do, "it is thus rare to see good houses dying" (*ibid*., 8). The liquidation phase is then seen as the process by which confidence can come back and then support the new *prosperity phase*."[27] ... there is no other period for which we can note such a spirit, more facilities for business, more confidence (trust) and more security than after the liquidation of crises." (*ibid*., 14)

In brief, prosperity contains the germs of the crisis : prosperity systematically is taken over from enthusiasm which is finally transformed, because of its excess, into speculation. There is then a kind of permanent oscillation between confidence and credulity, the latter one leading agents to consider investment as a lottery game. The natural liquidation process allows the economic system to come back to equilibrium.

III Schumpeter's Approach to Business Cycles

Schumpeter's homage to Juglar comes out most clearly first in his lecture given in Japan, eight years before the term "*Juglar cycle*" finally became established in his *Business Cycles*. The issues of business cycle theory and the long-run development of the capitalist economy were in the focus of attention by Joseph Schumpeter from the very beginning. In his research programme Schumpeter was strongly influenced by his admired teacher Eugen von Böhm-Bawerk whose seminar at the University of Vienna he had attended in summer 1905 in the age of 22. It was Böhm-Bawerk's view that business-cycle theory (or crisis theory) constitutes the final stage of a fully developed system of economic theory. Thus in a review of an influencial and elaborated survey of the history of economic crises theory by Eugen von Bergmann (1895) he had pointed out his view very clearly :

> "A crisis theory can never be the inquiry of a separate part of socio-economic phenomena but it is, if it should not be a dilettante absurdity, always the last or last but one chapter of a written or unwritten socio-economic system, the mature fruit of the perception of the complete socioeconomic phenomena and their interdependence." (Böhm-Bawerk 1898, 132)

To achieve this last or last but one stage of economic theory was Schumpeter's not very modest intention which he aimed for particularly in his *Theory of Economic Development*. A closer inspection of Bergmann's book shows that Juglar figures quite prominently and that the author credits the French economist for the "most careful and most accurate historical-statistical investigations of crises" and that "Clément Juglar had taught the periodicity of those economic phenomena even before Mills and Jevons."[28] Bergmann constitutes Juglar's distinction of three phases of the cycle : prosperity, crisis and liquidation, and deplores that quite often the crisis, in which the price increases of the prosperity period come to an end, is mixed up with the liquidation phase, in which prices have already gone down, despite Juglar's sharp analysis. (*ibid*., 255-60) Bergmann also clearly saw the prominent role Juglar gave to "wild speculation" which is fostered by credit, which thus appears as the main cause of crises in Juglar.

Including certain scepticism that despite all the praise of his analysis Juglar does not give a satisfying explanation of the causes of prosperity Schumpeter's assessment of Juglar does not differ from that of Bergmann's earlier one. However, there is one point where he goes beyond Bergmann, whom he testifies that "[w]ork prior to 1895 is fairly well covered" (Schumpeter 1954, 1123). Thus Schumpeter identified Juglar's great merits in pushing the crisis into the background and placing the problem of the *business cycle* into the focus of attention instead. However, it has to be stated that Schumpeter's own writings suffer from the same 'terminological lag' which he diagnoses in his survey of the literature on non-monetary cycle analysis during the period from 1870 to 1914, "that the 'cycle' definitely ousted the 'crisis' from its place in economists' minds and that the ground was cleared for the development of modern business-cycle analysis, though practically all workers in the field continued to use the old phrase."[29]

As is well known and has often been discussed, innovations, pioneering entrepreneurs and bank credit constitute the three key building blocks of Schumpeter's *Theory of Economic Development* in which "any single page is dedicated to the problem of the business cycle,"[30] and analyzing business cycles" means neither more nor less than analyzing the economic process of the capitalist era" (Schumpeter 1939, V). The pioneering entrepreneur is the agent of creative destruction in carrying out new combinations that include the five cases of the introduction of new methods of production, new products, the opening of new markets, new sources of supply, and new forms of organization. (S)he has a particular role to play in the overcoming of a depression.

The innovating entrepreneurs need financial means for their investment activity which is given to them in form of credit by the banking system. Schumpeter shares Wicksell's view that the disturbance of economic equilibrium primarily emerges because of an enlargement of profitable investment options due to technical progress. Schumpeter's assumption that available resources are fully utilized in the stationary circular flow implies that the carrying out of new combinations requires a different employment or reallocation of these resources. The entrepreneur must resort to credit if (s)he wishes to carry out new combinations since they cannot be financed by the returns from established production activities. The financing of innovations by means of credit is the function of the banking system. In Schumpeter's view the banker is not the trader but the producer of purchasing power. "[C]redit is essentially the creation of purchasing power for the purpose of transferring it to the entrepreneur, but not simply the transfer of existing purchasing power" (Schumpeter [1911] 1934, 107). The consequence of the creation of new purchasing power "out of nothing," *i.e.* not rooted in previous savings, is an increase of aggregate demand in monetary terms, which leads to an increase in prices. The credit-induced inflation acts as a tax on the mere managers stiffened in routine actions thereby implying a reallocation of productive resources. Although interest on capital is a monetary phenomenon, it is ultimately based on a real factor : the productivity-enhancing effects of innovations. Schumpeter thus makes *forced savings*, which play an important role in the analyses of his contemporaries Wicksell, Mises, Hayek and Robertson ("imposed lacking") but were already an argument in Henry Thornton as early as 1803, an integral part of his theory. However, in contrast to Mises and Hayek, who were adherents of the orthodox doctrine that only voluntary savings can create sustainable capital and held the view that the granting of a volume of credit which transcends the level of voluntary savings by the banking system inevitably leads to a crisis, the creation of money and credit for Schumpeter is an essential condition for the financing of innovational activities and thus development in competitive capitalism. Moreover, "the credit system is no very active factor in the mechanism of cycles. It adapts itself to the demand which comes from entrepreneurs and submits to contraction by their repayment of loans. In both cases its role is rather a passive one" (Schumpeter 1931, 17).

Schumpeter opposed the idea that the succession of prosperity and depression is a purely monetary phenomenon. According to him three factors are responsible for the end of prosperity and the setting in of the recession :

1. The competition for the scarce means of production which causes an increase of the prices of investment goods in the boom thereby lowering profit expectations for further investment.
2. The decline in prices when the new products enter the markets as the consequence of the enlarged productive capacities, thereby making a depression unavoidable.
3. Then the entrepreneurs use their returns for paying back their debts causing a credit deflation just in that period when the additional goods which could take away inflationary pressure as a consequence of the "abnormal" credit inducing the boom could be produced in a regular manner.

With these more positive views on the role of credit and its function to finance innovational activities Schumpeter clearly diverges from Juglar's explanation of cyclical fluctuations.

In his *Business Cycles*, Schumpeter (1939) presents a *three-cycle schema*, in which Kondratieff long-waves constitute the framework where they are combined with the classical Juglar and the shorter Kitchin cycles. In the preface to the English edition of TED we find the following statement : "I took it for granted that there was a single wave-like movement, viz. that discovered by Juglar. I am convinced now that there are at least three such movements, probably more, and that the most important problem which at present faces theorists of the cycle consists precisely in isolating them and in describing the phenomena incident to their interaction. But this element has not been introduced into the later editions" ([1911] 1934, IX). This statement is not surprising because the

Kitchin and the Kondratieff cycle were born in the economic literature only in the 1920s. It is quite interesting to notice that the idea of *superposition* of different complexes of causality was already there when Schumpeter presented the main ideas on the wave-like fluctuation in economic activity to the Harvard faculty shortly before the outbreak of World War I.[31)] However, for quite a time he had even struggled to construct a four-cycles schema including also the Kuznets cycle. This idea was presented in a letter to Arthur Spiethoff of 8 January 1931 and in his lecture on business-cycle theory delivered in Tokyo in the same month.[32)]

Innovations are not only the decisive impulse of cyclical fluctuations but the period of their implementation also determines the different length of the cycles. "Innovations, their immediate and ulterior effects and the response to them by the system, are the common 'cause' of them all, although different types of innovations and different kinds of effects may play different roles in each" (1939, 172). Schumpeter's monocausality argument implies strengths and weaknesses. Thus Tichy in his assessment of Schumpeter's business-cycle theory came to the conclusion "that Schumpeter's remarks on innovation were too poor a basis for the gigantic structure of theory built on it." (Tichy 1984, 83)

Schumpeter's monocausality argument also is at odds with the later understanding of economic theory that the cycles of different duration are related to different types of investment goods as the causal factor, *i.e.* that we have to distinguish between fluctuations in inventories (Kitchin), fluctuations in fixed capital investment (Juglar or Marx's echo effect), fluctuations in construction investment (Kuznets) and fluctuations in basic capital goods as the medium for basic innovations (Kondratieff).

IV　An Assessment of Juglar's Contribution in the View of Schumpeter and Other Pioneers of Business-Cycle Theory

In his assessment of Juglar's credit cycles Niehans[33)] came to the conclusion that "[n]obody has done more than Joseph Schumpeter to provide Juglar with a lasting memorial in the pantheon of economics.... Even Schumpeter, however, failed to provide an adequate summary of Juglar's substantive findings, no doubt because Juglar was such an ineffective expositor" (Niehans 1992, 566-67). Blaug (1986, 105) goes as far as to state that Juglar "made only a modest attempt to generalize from his data and certainly cannot be said to have provided a theory of business cycles." Would just the establishing of the periodicity of cyclical fluctuations be enough to enter the pantheon of economics?

Juglar developed an endogenous analysis of business cycles which at his time was opposed to the analysis of economic fluctuations as chronic cycles. Instead of the long-run equilibrium tradition which dominated at that time, Juglar constructed a business cycle theory as a natural movement. He opened the door for modern business cycles explanations based on an action-reaction sequence.

Juglar shares with Schumpeter the idea that cyclical fluctuations are an inherent characteristic of capitalist development, which proceeds in a wavelike-movement. Whereas these fluctuations are caused by innovations in Schumpeter, in Juglar they are the consequence of excessive speculative behavior which makes crises the necessary corrections of the system to adjust. The overheating results from the use people make of the capital and credit at their disposal.[34)]

Thus on the eve of World War I Juglar's idea of the periodicity of commercial crises has become established. In Wesley Mitchell's *Business Cycles*, which is praised by Schumpeter (1914-15, 6 n. 5) as "the greatest work since Juglar," [35] we find the following diagnosis of a fundamental point of agreement among business cycle analysts:

> "Crises are no longer treated as sudden catastrophes which interrupt the 'normal' course of business, as episodes which can be understood without investigation of the intervening years. On the contrary, the crisis is regarded as but the most dramatic and the briefest of the three phases of a business cycle – prosperity, crisis, and depression. Modern discussions endeavor to show why a crisis is followed by depression, and depression by prosperity, quite as much as to show why prosperity is followed by a crisis. In a word, the theory of crises has grown into the theory of business cycles." (Mitchell 1913, 5)

Thus the question was no longer whether crises are part of a cyclical movement but how the whole cycle as the regular succession of periods of varying economic activity can be explained.

Schumpeter's scheme of four phases of economic fluctuations – prosperity, recession, depression and recovery –, with two phases each moving away from respectively towards a state of equilibrium, is closely similar to Juglar's scheme. The latter does not only comprise the three subsequent phases of prosperity, crisis and then liquidation but also an important element of asymmetry. The prosperity phase as the 'natural' state of a growing economy is much longer, sometimes up to seven or nine years, and can be subdivided into a recovery (reequilibrating) phase induced by low prices and a period of overheating and excessive speculation in which prices rise beyond their natural or equilibrium value. The crisis is a very short phase characterized by a steep decline, whereas the liquidation is a longer phase of two to four years duration. Altogether Juglar's cyclical oscillations form a picture which does not have the symmetrical shape of sine curves which one can find as "Juglar cycles" in Schumpeter (1939).

It is also interesting to look at the work of Arthur Spiethoff, Schumpeter's colleague at the University of Bonn from 1925 to 1932 and himself one of the most eminent German business cycle analysts at the beginning of the twentieth century. Like Schumpeter, Spiethoff credits Juglar for identifying the phenomenon of cyclical fluctuations as an entity and thus marking the beginning of modern business cycle theory, and ranks Juglar together with Aftalion among those best researchers in the field who are captivated by the idea that price movements constitute the essence of business cycles.[36] They thus have forerunners in banking and currency theorists such as Thomas Tooke who systematically collected statistical information on price movements and already distinguished the three phases upswing, crisis and downswing. As a former research assistant to Gustav Schmoller, Spiethoff embedded his own analysis in a detailed study of historical material. His striving for generalization and aiming to synthesize the features of most of the prevalent business cycle theories of his time in order to arrive at a comprehensive picture of industrial fluctuations also led Spiethoff to a scheme of a typical cycle consisting of three phases or stages: upswing, crisis and downswing.[37] For an upswing to occur, new impulses are necessary, such as the emergence of new technologies, new industries and new markets. An indispensable means for the upswing to gain momentum is the availability and extension of credit which allows industry to bring unutilized capacities and unemployed labor into operation more quickly and in particular the process of new capital formation, which is important since the upswing normally starts in the investment goods industry. For Spiethoff every crisis is a credit crisis and consists in the sudden collapse of credit which causes numerous suspensions of payment. Whereas the downswing can be subdivided into the recession phase with the existence of overproduction, falling profits and a decline of investment, and a first revival phase where this tendency comes to an end, the upswing comprises the three subphases of a second revival with greatly increased investment, the boom period characterized by rising interest rates and, finally, the period of capital scarcity in which financial capital is difficult to find, rates of interest are high, investment declines and share prices recede. Like Schumpeter, Spiethoff regards booms and depressions as the essential, "wavelike" movement of capitalist development. Although there are certain similarities of his schematic presentation of the various phases of the cycle with that of Juglar, despite all his esteem for the founder of modern business cycle research Spiethoff is quite critical of the latter :

> "He [Juglar] lacks all insights into the characteristic high-capitalist foundation of the century and into capitalist economics in general. He gives the impression of a sleepwalker, and the reader departs from his work more with the feeling to have stood in front of a veiled painting than to have gained economic perception. The ample literature on overproduction is hardly existing for him. His mode of thinking resembles much more that of those authors of the narrower symptoms of crises from the area of credit, bank and stock exchange system than that of the great thinkers in economics who have investigated overproduction." (Spiethoff 1955, 149)

Knut Wicksell who is well known for his ideas on the cumulative process, *i.e.* price level fluctuations caused by divergences between the natural and the bank-dominated market rate of interest, nevertheless held a real view of the cycle in which he identified technical progress as the decisive cause and — like Spiethoff — the changing relative size of real capital investment as the most important and independent characteristic of cyclical fluctuations. Thus according to Wicksell it would be wrong to regard a rise (fall) in prices as the cause of good (bad) times, although "Clément Juglar .. may well be right" that "the crises themselves consist of the sudden cessation of the rise in commodity prices." [38)]

Wicksell has also been strongly influenced by the work of Mikhail I. Tugan-Baranovsky who had not only emphasized that a credit economy is prone to instability but was one of the first authors who based his theory of the credit cycle on fluctuations in fixed capital investment. Tugan-Baranovsky rightly notes that Juglar belongs to the group of authors who look for an explanation of the business cycle in price fluctuations[39)] (and the role played by the rate of interest), without, however, giving a fully satisfactory explanation of these price fluctuations and without analysing the severe fluctuations in the activity levels of the capital-goods-producing industries and the structural adjustment required by the disproportionate industrial growth pattern that is to be followed by the economy in the course of an upswing. For the same reasons Alvin Hansen, Schumpeter's colleague at Harvard from 1937-50, who also viewed investment fluctuations as the main determinant of business cycles rather than monetary factors, came to the conclusion that the ideas contained in Juglar's book "are cast in terms of the mid-nineteenth century view that crises are predominantly a monetary, banking, and financial phenomenon. The role of investment in fixed capital is not yet recognized." (Hansen 1951, 219)

Some economists, like Lescure, have criticized the fact that Juglar's explanation relies too much on speculative behavior which they do not consider as essential to the economic movement.[40] Juglar's theory based on credit cycles is seducing and certainly far more convincing than a purely monetary theory. One can also say that there is in Juglar an argument explaining how credit cycles are converted into business cycles. Certainly, such a reading of Juglar in terms of contagion effects makes him more modern and although there is in Juglar's analysis not an original theory as a whole, one can at least find a consistent analysis of the contribution of credit cycles to business cycles.

Despite weaknesses, it comes to no surprise that Schumpeter, who had given his monumental study on *Business Cycles* (1939) the subtitle "*A Theoretical, Historical and Statistical Analysis of the Capitalist Process*," appreciates Juglar for having been "the first to use time-series material (mainly prices, interest rates, and central bank balances) systematically and with the clear purpose in mind of analyzing a definite phenomenon. Since this is the fundamental method of modern business-cycle analysis, he can be justly called its ancestor" (Schumpeter 1954, 1124).

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Notes

1) After becoming a physician, and after having realized highly profitable investments, Juglar wrote essays in economics and dedicated most of his work to the understanding of periodic crises.
2) Honorary professor at the School of Political Sciences, Clément Juglar was also Vice-President of the *Société d'Economie Politique*, former president of the *Société de Statistique*, former president of the *Société d'Economie Sociale*, member of the committee for historical and scientific works, member of the superior Council of Statistics, honorary member of the Royal Society of Statistics in London, and member of the *International Institute of Statistics* since its foundation in 1885. Finally, he was elected member of the *Académie des Sciences Morales et Politiques* on the 24th of December 1892.
3) On that point see Gilman (1991) who considers that Juglar's contribution to the analysis of business cycles was totally ignored by a large part of the academics.
4) Concerning the long-run influence of Juglar's contribution, things seem to be different than Gilman (1991) stressed it. Dangel-Hagnauer and Raybaut (2005) analyze the influence of Juglar's contribution on Aftalion, Lescure and Nogaro. It seems that despite the fact those approaches remain different, there is a clear common core of hypotheses which can be identified as characterising a typical Juglarian view.
5) See also Schumpeter (1939), *Business Cycles*, pp. 162-63. However, although Juglar grasped the requirement to investigate the whole cycle, he still called his book *Des Crises Commerciales*.

6) Successively, Juglar rejected various explanations of crises such as Say's argument based on an excess monetary emission, or the one of Wilson based on speculation without explaining the source of that behavior.

7) Indeed, it seems that when the Academy decided to hold a competition and asked that question, it was already because of a publication of Juglar in 1857 mentioning that the periodicity of fluctuations could be expected via the observation of prices. The exact question asked by the Academy was "rechercher les causes et signaler les effets des crises commerciales survenues en Europe et dans l'Amérique du Nord durant le cours du XIX[e] siècle."

8) The papers he published in the first years mainly concerned population growth and the wealth of nations and also focused on agricultural issues, but between 1857 and 1861 he published five papers analyzing exclusively commercial crises. An updated version of the 1862 essay was published in 1889 in addition with extracts of other articles dealing with commercial crises.

9) For a clear exposition of each of those three aspects, see Pélissier (2000).

10) Juglar ([1862] 1889, 13). All translations from the French original are ours.

11) Despite having been a great admirer of Juglar's works, Schumpeter considered that Juglar failed in his attempt to build an endogenous (or deterministic) theory of business cycles. Although Juglar definitively introduced the idea that prosperity is the cause of crisis and also proved he was right with empirical observations, he nevertheless did not explain what really causes prosperity or growth, and he also never really provided an explanation for the upswing of the cycle.

12) In his *Business Cycles* (1939) Schumpeter later expanded it from two to four phases of economic cycles: prosperity, recession, depression and recovery.

13) There exists a debate concerning the status of that quotation of Juglar by Schumpeter: nobody really found that exact sentence in Juglar's writings. See, for example, Niehans (1992, 554-55), who, however, rightly emphasizes that "Schumpeter's phrase, though apparently not used by Juglar, is an accurate expression of the latter's thinking."

14) On Sombart see Hagemann and Landesmann (1996).

15) At the end of his 1863 article Juglar rejected many theoretical approaches of his contemporaries on the basis of his observations.

16) Comparing the evolution of a variable from one year to the other could only explain purely temporary and peculiar changes and then, may imply misleading conclusions.

17) For a detailed analysis of his statistical method see Pélissier (2000).

18) One can notice that as a catholic liberal, Juglar was not attacked by the French liberal orthodox who were highly dominant in the academic staff. Among them Juglar was nevertheless an outsider. For further details see Gilman (1991).

19) That handbook essay is very much known and can be considered as a condensed summary of the essential theses of the book published first in 1862.

20) That idea supposes that *one* predisposition can be at the origin of *different* symptoms.

21) Thus Juglar's view of cyclical fluctuations is opposed to the ones later held by Mises and Hayek who developed a monetary overinvestment theory of cyclical fluctuations.

22) If metallic circulation increases more rapidly than capital, that metallic money will be exported.

23) Juglar mentions that crises in general last one or two years and that prosperity periods in general last seven or eight years (Juglar 1863, 7).

24) Juglar ([1862] 1889) p. 25, paraphrasing Wilson.

25) In the [1862] 1889 book Juglar explicitly refers to natural prices and analyses speculation as a movement leading prices away from their natural levels. In fact, it is in 1868 that he really examines the question of prices dynamics.

26) See Juglar ([1862] 1889, 322).

27) We must notice here that Juglar does not consider the recovery process as a period *per se* of the business cycles sequence.

28) See Bergmann (1895, 255).

29) *Ibid*. For a more detailed analysis, see

Hagemann (2003).

30) See Schumpeter's foreword to the fourth German edition (1934, XIII).
31) See Schumpeter (1914-15, 4-5).
32) See Schumpeter (2000, 183-86) and Schumpeter (1931).
33) Niehans's paper is one of the very few contributions dedicated to the understanding and formalization of Juglar's cycles. However, we are not convinced by the model Niehans proposes, mainly for two reasons. First, Juglar based his credit cycles on speculation and contagion, two mechanisms which are absent in Niehans's model. Second, the representation given in Niehans's paper places Juglar much more on the side of the Currency School than in the perspective of the Banking School which misinterprets the message of Juglar's contribution.
34) Juglar seems to have been influenced by the vague views on the relation between credit and capital of Henry Dunning Macleod which were widely discussed at his time.
35) Schumpeter (1914-15, 6 n. 5).
36) See Spiethoff (1955, 45).
37) For greater details see the classical article by Spiethoff [1925] 1953.
38) Wicksell ([1906]1935, 209).
39) See Tugan-Baranovsky ([1901]2002, 41-42).
40) For a more detailed analysis of Lescure's contribution, see Raybaut (2000).

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