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AN INITIAL STEP IN THE EARLY STAGES OF BUSINESS CYCLE THEORIES: THE CONTRIBUTION OF T. VEBLEN

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INTRODUCTION

While T. Veblen has been recognized for being one of the leading founders of the American Institutional School, along with Commons and Mitchell, he is also considered today as one of the precursors of modern evolutionary economics (Veblen, 1898; David, 1985; Hodgson, 1994). His economic analysis has also received some attention. Notably, Veblen has made significant contributions both to microeconomics, with a theory of the firm and of some social interactions, and to macroeconomics, with a business cycle theory. More specifically, it is admitted that Veblen's business cycle theory was an early attempt to consider the primary underpinning of fluctuations in the relationship between current capitalization and anticipated earning capacity.

Many authors have already defended that a business cycle theory can be developed from Veblen's ideas, even if it is incomplete, admittedly not very systematic and lacking rigorousness¹. A relationship between Veblen's theory and other business cycle theories in the perspective of the history of economic thought can be outlined, e.g., Aftalion's, Lescure's,

¹ There is an extensive review of the secondary literature and an analysis of the business cycle in Mendez's thesis (2012, pp. 117-177).

Fisher's and Mitchell's approaches. Under a theory of actual overcapitalization, Aftalion explained the duration of cycle with the joint role of production delays and the accelerator mechanism. Veblen also underlined time-lag phenomenon in economic process, firstly related to the distance of firms from the point of distortion, which implies that they are not all affected by changes in price at the same time. But the originality of Veblen's analysis is above all the insistence on the time of contracts' execution (Pirou, 1946, p. 81). Veblen shared with Lescure—and many other theorists of their time—the assumption that a close relationship exists between the fluctuation of capitalization and the confidence in potential profits (Mitchell, 1927, p. 88). Although Veblen shared Fisher's conception of capital as an entity whose primary importance depends on its ability to generate future incomes, he had not taken into account the specific role of interest rates in Fisher's theory (Dimand, 1998). Then, according to Veblen, (1) the origin of crises depends less on interest rate changes than on an anticipation of the earning-capacities of different types of assets, and (2) the main issue is that the magnitude of fluctuations affects capitalization values more than production volumes. From this point of view, the theory of business cycle that has the most common features with that of Veblen is Mitchell's much-known one. In the latter case, Mitchell was explicitly inspired by Veblen's conceptions of economic behavior, economic methodology, and above all by his so-called institutionalism (Rutherford, 2000) and evolutionism (Sherman, 2001). Like Veblen, Mitchell considered that business cycles demonstrate that the processes of making and distributing goods are mainly organized under the business principles of making profit. And like Veblen too, Mitchell described the business cycle as an endogenous process with the institutions of capitalist economy: *"Mitchell showed that all the institutions of the pecuniary economy market exchange, production for profit, and money—must be present if there is to be a business cycle"* (Sherman, 2001, p. 86).

In the field of more contemporary history of economic thought, Dimand considered that Veblen's theory echoed Tobin's and Minsky's financial instability theories (Dimand, 2004). Moreover, Veblen's conceptions provide enough originality to be used as a reference by some contemporary authors in the macroeconomic field. They refer to the tradition that *"can be traced at least as far back as Veblen who described the positive interactions between asset prices and collateralized borrowing"* (Kiyotaki and Moore, 1997, p. 24) and then could be considered as the *"first financial cycle theory"* (Toporowski, 2005).

The purpose of this paper is to evaluate Veblen's endeavor to provide a consistent theory of business cycles and then to examine the actual type of theory being forwarded. In this perspective, we outline that Veblen endeavors to explain institutional factors and evolutionary mechanisms. The first section will offer an understanding emphasizing the institutional dimension underlying Veblen's theory. The second section will present the business cycle and crises according to Veblen. The third section will focus on determining if his conception of the business cycle can be classified as exogenous or endogenous, and if the fluctuations considered are monetary or real. The final section will propose an interpretation highlighting the evolutionary mechanisms, with an investigation of the nature of disequilibrium processes in economic cycles. We will show that connections can be made with some contemporary multi-agents models simulating financial crises.

1. THE INSTITUTIONAL CONTEXT OF THE BUSINESS CYCLE

Veblen is known to be one of the founders of institutionalism in economics. He wanted to analyze economic facts from institutions rather than from rational individual actors. Therefore, for Veblen, it was necessary to reject universal and timeless explanations and to adopt historical contextualization. In Veblen's perspective, the institutions that organize economic life defined as the "*settled habits of thought common to the generality of men*", and therefore mold the nature of expectations of actors. They are thus essential to understanding economic processes. Thus, in this section, we propose a presentation of the historical and institutional context within which Veblen's business cycle theory takes place.

Under Veblen's conception, an economic phenomenon is to a certain extent history-specific, which is explained by the institutions prevailing at the time. Therefore, the modern crises Veblen witnessed did not display the same symptoms or characteristics as the previous ones. Price rises during the "*old regime*" meant disequilibrium, whereas under the "*new regime*" decreasing prices suggested hard times. Moreover, endogenous business cycles replaced crashes and accidental disruptions as a result of modern capitalism's institutions. In his 1904 book, Veblen considered that after

1873, the capitalist system was confined to a long depression trend with shorter cycle phases. The regular alternation of prosperity and depression was relegated to the period between 1816 and 1873. According to his analysis, fluctuations showed no real regularity before 1816, and this for two main reasons. First, the industrial system was not adequately connected to allow for the fast transmission of disturbances throughout the economy. Second, before 1816, the technological system was not yet very well-developed. Thus, technical progress is a factor in the continuous fall in costs, and the fall in prices is a primary explanatory element in Veblen's conception of economic depression, as we will see after. Therefore, before 1816 economic disturbances were essentially speculative crashes that did not deeply affect the area of production. Crises could also be experienced as a result of external causes, such as crop devastation or war. In these cases, no cyclical movement of economic data occurred. After 1873, on the contrary, Veblen stated that the economic system was in a state of chronic depression. The recovery stages were more heavily compressed and less frequent. During this period, technological progress was dramatic, yet exerted tremendous pressure on older industries that did not benefit from the fall in costs. From that time, the business cycle became endogenous. *"The true", asserted Veblen, "or what may be called the normal, crises, depressions and exaltations in the business world are not the result of accidents, such as the failure of a crop. They come in the regular course of business. The depression and the exaltation are in a measure bound together"* (Veblen, 1904, p. 183).

Veblen pointed out a historical disruption in the economic institutions, which made finance appear as a major and central feature for production and for competition strength, marked by the development of joint stock companies and the concentration of capital supported by powerful investment banks. From Veblen's point of view, at least two significant changes should be noticed: the change in the nature of capital, and the change in the management of firms. Thus, a major shift occurred in the conception of capital and of its property, which was no more conceived as a set of physical assets but as financial assets. With incorporeal and intangible assets constituting companies' goodwill, capitalists' ownership no longer concerned the physical assets of production, but securities, and the main capital property was its *"earning-capacity"*. Moreover, competition not only occurred in the goods markets, but also in the assets markets. In this economic pattern, *"recourse to credit becomes the general practice, the regular course of competitive business management, and competition goes on the basis of such a use*

of credit as an auxiliary to the capital in hand" (Veblen, 1904, p. 97)². Veblen then emphasized the growing distinction between industrial capital and business capital as a main feature of modern capitalism. From Veblen's point of view, the growth of finance is the main cause of instability even if "it has been customary to approach the problem from the side of the industrial phenomena involved – the mechanical facts of production and consumption; rather than from the side of business enterprise – the phenomena of prices, earnings, and capitalization" (Veblen, 1904, p. 184-5).

Another feature of capitalism of Veblen's time that must be noted is a separation, within firms, between technical and productive functions on the one hand, and from financial and commercial functions on the other hand. Such was not the case during the early stage of capitalism, these functions being unified in the hands of captains of industry. The problem then stemmed from the fact that the separated functions were related to the criterion of economic efficiency, which were at least different, if not altogether divergent. According to "industrial experts", the goal of firms was to "make goods". But according to the "captain of finance", it was to "make money". Why have these aspirations not always overlapped? Because they did not necessarily rely on the same conception of "value". The industrial conception is grounded in the use value of production, i.e., product quality and abundant output. Business's conception is grounded in "exchange or scarcity value", i.e., maximum unit price, even if the margin is obtained through output restrictions or reduced product quality. Thus, two measures of value can be distinguished, the industrial one quantifying the contribution to the conditions of living in a given society, and the market value, which only depends on differential monetary gains.

2 In this perspective, Veblen distinguishes his proposal from that of Tougan-Baranowski (Tougan-Baranowski, 1913), in which he did, however, recognize some acute observations and theories. From Marx's analysis of industrial sectors, i.e., production goods industries and consumption goods industries, Tougan-Baranowski stated that an excessive accumulation of capital equipment and an even income distribution were responsible for lapses from prosperity into depression. According to this position, crises are connected with the "material process of economic life (production and consumption)" (Veblen, 1904, p. 185, footnote 1). While admitting the strategic role of production goods industries, Veblen nevertheless sought to ground his own explanation of fluctuations in terms of business principles, i.e., in terms of money and prices more than in terms of production and consumption.

Moreover, for Veblen, dissimilarity in value conceptions had grown with an increasing use, within firms, of financing by means of credit and financial markets. This modality of financing was coupled with the control of firms by majority shareholders becoming “absentee ownership”—financial goals taking precedence over industrial purposes. Namely, in modern capitalism, decision-making authority is held by majority shareholders focused on goodwill and acting as absentee owners and creditors: “Since business has become the central and controlling interest, the question of welfare has become a question of price” (Veblen, 1904, p. 177). Therefore, “industry is controlled by business exigencies and is carried on for business ends” (*ibid.*, p. 210). Then, the determining factor of the business is no less the physical capital accumulation than the conditions of competition orchestrating financial returns and pay backs.

Veblen considered that the habits of thought formed by the institutions of economic systems led the capitalist system of his times to favor the principles of financial business. Whereas technical progress is a potential beneficial factor in terms of living conditions, it turns out that the business system makes it an element which adversely affects monetary profit. The so-called inter-institutional conflict between industrial and pecuniary principles is in fact a great disturbance-generating factor. The “inordinate productivity of the modern machine process” actually undermines the business base within the framework of a market economy with sharp competition. Technical progress drives output volumes and productivity higher. Businessmen seek to set prices at the point of maximum net revenue. However, the price level is fixed by the scarcity principle of value, and the businessmen are concerned that oversupply will reduce profits. This problem is acute since, in a competitive market structure, the aggregate volume of production is not controlled by any individual firm. Strong levels of industrial productivity create distortions in economy and undermine price and profit growth.

At this historical time marked by its specific institutions—a sustained pace of technological evolution, the money and credit economy and sharp competition—the economic system, subject to contradictions, was very unstable and did not conceal an endogenous mechanism capable of restoring equilibrium. Consequently, in the absence of a *deus ex machina*, “under the regime of the perfect machine industry and a perfect business organization, with active competition throughout, it is at least probable that depression would not be seriously interrupted by any other cause” (Veblen, 1904, p. 245).

Having established the historical and institutional context, now let us consider the nature of the business cycle according to Veblen.

2. PROSPERITY AND DEPRESSION IN VEBLEN'S BUSINESS CYCLE THEORY

This section proposes a restitution of the business cycle according to Veblen, notably from the author's 1892 text, where he reinterprets Say's law on the impossibility of a general overproduction by integrating the expectations of profit and the role of credit relationships.

The business cycle sequence can be restored from the prosperity phase, along with its inflationary trend. The upward phase of the cycle is characterized by an increase in demand and in the selling prices of products for certain industries. Then the price rises extend from some individual firms to a broad segment of industries because of a different kind of interdependence in the economic system. A two-stage prosperity can be discerned. During the first stage, an unfolding profit-anticipation bound is observable, grounded in the differential gain between rising output prices and costs which are increasing less rapidly. A differential advantage is also apparent for certain industries by virtue of their relative proximity to the origin of the positive price disturbance. In the context of growing importance of financial markets, optimistic anticipations enhance firms' capitalization. This inflating capitalization, according to Veblen, is most heavily grounded in the anticipation of earning capacity and in goodwill rather than in the real value of firms' tangible assets, which merely rises as a consequence and to a lesser extent. According to Mitchell, *"this sequence of growing demand, rising prices, increasing expectations of profit and swelling capitalization, repeating itself on an ever-growing scale so long as its basis lasts - an anticipated increase in demand or selling prices greater than the anticipated increase in costs"* (Mitchell, 1927, p. 80). Notably, growing capitalization, which represents the collateral for loans, authorizes the expansion of credit and financial investments. The security behind such loans is the prospective net income, capitalized at the then-current rate of interest. In a context of competition, firms mainly use these loans to increase their property. In fact, indebtedness enables capitalistic control to increase the differential advantages of some firms from their competitors. The result is a rise

of financial liability of the firm, that is of business capital, but not of capacity of production. Then, distinguishing the two meanings of capital, Veblen said that *“taken in the aggregate, the funds so added to business capital represent no material capital or production goods; they are capital only; they swell the volume of business, as counted in terms of price, but they do not directly swell the volume of industry”* (Veblen 1904, p. 99).

During the second phase of the business cycle, the differential advantages decline both between output prices and input prices, and between rival firms. The expected rate of profit, incorporated in the offer price, does not occur for two reasons: (1) speculation may have caused too high profit expectations, and (2) lower production costs are induced by technological innovations; *“This divergence may be due to several different causes, but usually and mainly to two general ones, – a speculative movement, and an increased efficiency of industry”* (Veblen, 1892, p. 491). To the extent that price increases are the basis of profit expectations and assets evaluation, the fall in prices linked to technical progress is a turning point in the cycle. Without doubt, it is also a factor of differentiation of the firms according to whether they are affected by the improvement of the productivity: those that are *“lagging”* to adjust their prices are those whose profit expectations are the most disappointed. So, *“The actual present value of the property, as capitalised on the basis of its present earning capacity or on the cost of replacing it, falls short of its nominal, accepted value; and, as profits continue to be computed on the basis of this accepted nominal value, the rate of profit actually obtainable falls short of what is accepted as the customary and proper rate. The profit, computed on this basis, may even entirely disappear”* (Veblen, 1892, pp. 489-490).

For Veblen, prosperity does not end abruptly, but instead is self-sustained and prolonged, with two mechanisms operating. The first one is the relative predominance of the financial fluctuations compared with the material ones, this idea being often considered as Veblen's specific conception and as an early announcement of later business cycles theories. The second mechanism is inertia due to the time of contract execution, which is rather original in business cycle conceptions (Pirou, 1946, p. 81). The first mechanism relies on the *“shortsightedness”* of economic agents. Businessmen are victims of a type of monetary illusion, the capitalization of industrial liabilities gets exaggerated by speculative anticipation, and the competition for industrial property leads to an inflationary effect on assets with a cumulative process: *“for these creditors, too, like other men who live by and*

under the price system, go on the assumption that money values are the final reality of things, and that they can lose nothing so long as the face value of their paper is undiminished and the solvency of the debtor impaired" (Veblen, 1923, p. 183). Collateral prices are consequently inflated, thus entailing an expansion of debenture credit underwritten by these securities. For Veblen, the anticipations were a major factor in the process of expansion of values in the growing phase of the cycle. The second mechanism, which is inertia, depends on the time required to fulfill contracts. Most economic transactions, purchasing, selling and all financial transactions are accomplished through contracts, the terms of which extend and perpetuate trends in price changes over time: "These contracts may be of the nature of loans, advances, outstanding accounts, engagements for future delivery or future acceptance, but in the nature of the case they involve credit obligations" (*ibid.*, p. 188). Even if difficulties realizing the anticipated profits begin to appear, invoices must be paid at a previously fixed price, credits must be honored, preventing a rapid adjustment to the new conditions, etc.

Indeed, Veblen did not explain the turnaround mechanism to the depression and crisis phase with great precision (Mendez, 2012), this change being related to a decrease in differential advantages and in gains expectations which are no longer realized. The divorce between expectations and effective profit becomes apparent. Production costs just keep pace with selling prices, and profits are trimmed. Moreover, an intensive use of credit transactions gives rise to a special cause and effect in the business cycle process. Some creditors begin to think that firms' capitalization is unreasonable, and a time of distrust sets in. If we use Mitchell's words, "to bring on a general crisis, it needs but that some considerable creditors should conclude that the present earning capacity of his debtors no longer warrants the capitalization upon which their collateral is appraised" (Mitchell, 1927, p. 80). And if capital is borrowed, then "whenever the nominal owner of the means of production is not also the real owner, as happens in the case of borrowed capital, he becomes answerable to the real owner – the lender – for any amount by which the actual present value of the property may fall short of the accepted valuation". Expectations turn away, and Veblen stated that "business depression and exaltation are, at least in their first incidence, of the nature of psychological fact, just as price movement is a psychological phenomenon" (Veblen, 1904, p. 187). "Pyramidal" credit transactions, which represent one of the main features of modern capitalism, are the driving force behind recession and crisis. Securities are reduced to the point that any additional extension of credit can no longer

be supported, yet new credit becomes necessary for fulfilling contracts and paying back loans. Companies need new loans, but banks no longer want to lend because of their negative expectations about price movements of goods and assets. The result of this credit crunch is insolvency, firms' liquidation and forced sales. Credit ramifications prove to be so significant that most creditors are often debtors as well. Businesses, pressed for payment, simply pass on the burden to other firms, and so on down the line. Consequently, bankruptcies multiply by calls for debt payoff. The early repayment of debts gives rise to depreciation of asset values and a reshuffling of industrial property in favor of creditors. For Veblen, countertrends are also present, thereby preventing against a collapse of the whole economy. But these countertrends remain external: a pool of creditors or governmental organizations can lessen crash-sustaining credit to the benefit of certain critical industries.

In Veblen's analysis, the adjustment for quantitative imprecision between supply and demand is not the main feature of the economic cycle. It is instead explained by the intrinsic financial instabilities of the capitalism of his time; Veblen did not believe that self-sustaining business cycles could spontaneously taper off in an equilibrium state. This assertion can be related to his evolutionist conception of economic dynamics.

After presenting the cycle according to Veblen, it is now time to propose some interpretations. The following sections offer an interpretation of the theory of Veblen's approach, the traditional categories of cycles—endogenous/exogenous and real/monetary—providing a framework for this first step.

3. VEBLEN'S BUSINESS CYCLE THEORY: ENDOGENOUS OR EXOGENOUS, REAL OR MONETARY?

According to certain classifications of business cycle theories, Veblen belongs to a group of economists who "place emphasis on factors other than on economic institutions" (Persons, 1926, p. 102). For the authors belonging to this group, "a specific disturbance, such as an unusual harvest or war... may upset the economic equilibrium and set into motion a sequence that will not be repeated

unless another specific disturbance occurs" (ibid.). From this perspective, Veblen's explanation is an exogenous one. However, there are some reasons to believe that this assessment is quite unsuited. The least of these reasons is the inherent inconsistency that would lead the recognized major precursor of the American School of Institutional Economics to rule out institutional factors in economic phenomena.

It must first be remembered that for Veblen, the American crises of the late 19th century were no longer really cyclical in the sense that the depression stages were becoming more numerous and close together. By separating the cycle into three stages, we can then examine each phase to see if it relates to an endogenous or exogenous mechanism. It can be separated into 1) disturbing factors, 2) accelerating factors, and 3) limiting factors—all of them inducing business cycles. According to Veblen's conception, the first factor and (to a certain extent) the third rely on external factors, but the second one is of an internal type. Thus, the disturbing factor initiating the descending phase of the cycle is a fall in prices because of the technical progress. Where does technological change come from? Veblen did not explain this by economic causes, he regarded it as an anthropological phenomenon: human beings, in their relationship with their environment, always seek to improve their living conditions by producing technologies. Other external factor Veblen underlined include the representation of the economic actors or the private or public interventions which can stop the deepening crisis. Then, exogenous factors in Veblen's analysis are ultimately limited to the initial impulsion behind price increases at the onset of prosperity and the limiting factors during the depression. However, the self-reinforcing process in both inflationist and deflationist stages and its exhaustion attest that Veblen's type of business cycle theory is dominated by an endogenous approach.

A second criterion of business cycle theory classification has to do with whether business cycles are real or monetary. As an example, Hansen distinguished three types of business cycles theories: the capitalistic economy school, the exchange economy school—both analyzing the cycle in real terms—and the money economy school. On the one hand, it is recognized that Veblen's theory places emphasis on money and credit (Parker-Foster and Ranson, 1987) and thus gets classified as the third type (Hansen, 1927). On the other hand, it has also been outlined that, according to Veblen's theory, technical progress is a key determinant of economic mechanisms

(Sweezy, 1958). On the basis of this latter point, Veblen's theory would be classified as the real economy type.

It must be stressed at once that Veblen's cycle theory does not involve so much monetary policy or the money market that, for example, the interest rate would be a trigger for the crisis. But the change in interest rates is rather a consequence of what happens in the credit market and in profit expectations. So, what can be considered as monetary in the analysis of Veblen is the significance of the effects of indebtedness on the course of the cycle and businessmen's habits of thought, focusing more on nominal value than on real value (quantities or volume)³. While both money and technology are indeed important, it is precisely their conflicting combination that takes place within economic fluctuations. It can be argued that the dichotomy between "pecuniary employment" and "industrial employment", described in Veblen's theory of the firm (Veblen, 1921), can be conceived as a possible microfoundation of its macroeconomics. Veblen claims then that in the modern economic system, "money values are the final reality of things" (*ibid.*, p. 183). He stated that the business cycle depends on legal-economic system institutions running through the money/credit mechanism governing the technological processes of production, but also on distribution, individual exchange and market processes. In particular, the general use of credit is a factor of discrepancy between real and nominal values. In the course of business cycles, value fluctuation is the primary effect, merely exerting a secondary and remote effect on the volume of industrial production, which then fluctuates less and only as a reaction. In the optimistic phase of the cycle, marked by an increase in prices and anticipated revenues, the use of credit to finance investments and external growth contributes to the general increase in prices and firms' capitalization. Then, the prosperity phase, the expansion of credit first leads to inflation: "An immediate consequence of the mobilization of savings by corporation finance, therefore, will be an inflation of general prices, a depreciation of the currency" (Veblen, 1923, p. 87). Secondly, this increase in credit, although inflationist, has little effect on business earnings, since the return for the financial capitalist is deduced from the profit of the industrial capitalist (Phillips, 1987). Thirdly, this extension of credit increases as much as industrial production. Credit is sought less as regards physical property, as opposed to

3 For example, the conception of value and its criticism of economics on value can be found in Brette 2016.

securities (which specifically indicate indebtedness). Loans of all types are a duplication of credit based upon the same underlying material items and exert no direct effect on industry, except to inflate values: *“Loan credit in excess of what may serve to transfer the management of industrial materials from the owner to a more competent user... serves, on the whole, not to increase the quantity of the material means of industry nor, directly, to enhance the effectiveness of their use; but taken in the aggregate, it serves only to widen the discrepancy between business capital and industrial equipment”* (Veblen, 1904, pp. 104-105).

Furthermore, depression and crisis are fundamentally monetary and financial phenomena. *“It is in business that depression is felt... it is also in business (pecuniary) terms that the depression is measured”* (ibid., p. 213). Depression first impacts business, and only afterwards the workforce, especially by unemployment. Indeed, the fall in wages is temporized by falling prices, until bankruptcies have a real effect on employment. Production volumes fluctuate less than prices and capitalization values. The crisis *“leaves the business men collectively poorer, in terms of money value; but the property which they hold between them may not be appreciably smaller in point of physical magnitude or of mechanical efficiency than it was before the liquidation set in”* (ibid., p. 191). The crisis first affects intangible assets (capitalization values) and then tangible assets, but in the end the real stake of a crisis is the redistribution of industrial ownership.

Veblen's commentary about the idea of an overproduction crisis perfectly expresses his point of view (Veblen, 1892). According to business, overproduction implies a general production in excess of demand at remunerative prices, i.e., at *“a price that will afford the customary profit on the capital invested”*. Depression is distinguished by the fact that the average obtainable profit at the time the capital is invested falls short of the accepted standard: *“The average rate of profit from past investments, indicated by the ratio of their earning capacity to their accepted capitalization, falls short of the accepted customary profit, indicated by the customary rate of interest on money seeking investment. The precise difficulty is that divergence has taken place between the accepted nominal value of property based on its past capitalization and its actual present value, indicated by its present earning capacity or the present cost of replacing it”* (Veblen, 1892, p. 489).

Business shows reluctance in light of the readjustment in price scales imposed by the circumstances; profits continue to be evaluated on the basis of past nominal values. Moreover, *“the characteristic fact in a case of*

general overproduction is that the basis on which remunerative prices and customary profit are computed has become obsolete” (ibid., p. 490).

Technical progress now warrants mention, along with its specific effects on business cycles. According to Veblen, “the state of industrial arts... is no longer to be conceived as stationary” (Veblen, 1904, p. 228). A gradual, but steady, improvement in technical equipment should be noted in the field of production. This progress is incorporated by those categories of workers imbued with industrial habits of thought, e.g., engineers, and their value criteria (product quality, output level). Additionally, the effects of technical progress are disseminated throughout the industrial system, inducing more efficiency in plants and production processes. Moreover, unit costs are likely to decrease under the influence of technological change. Yet with respect to business principles, technical change is more heavily associated with depression intensification. Admittedly, production costs and industrial equipment costs experience a decrease. However, during the depression phase, this decline is not as significant as the fall in earning capacity. Technical progress has contradictory effects upon the economy. Its beneficial impact, both technically and economically, on prices and productivity permeates the transactions that frame the industrial system. Yet technical change is also an element of the differentiation in production conditions between various generations of productive equipment. This time lag between technical and economic conditions is a discriminatory element of competition. It is reinforced by credit contracts with fixed interest rates, which represent another cost differentiation factor between old and new industries.

Veblen was not a monetarist, nor a crude materialistic thinker for that matter. In business cycles, monetary factors and industrial factors are intricate. In fact, the duality is rightly recognized as the inter-institutional contradiction between “finance” and “industry”, which is central to his interpretation of business fluctuations. Industry and technology are controlled by pecuniary institutions by virtue of the nature of property rights and of firms’ governance. Nonetheless, technical progress is steadily impeding the ascendancy of business, revealing its destabilizing property in a market economy.

Veblen is also known for advocating for an evolutionary economics that is directed towards explaining economic dynamics rather than analyzing

equilibrium. Institutional analysis itself is interested in change, but also in inertia effects. The last section will propose an interpretation of the business cycle in light of Veblen's evolutionist mechanisms. We will make a parallel between some more contemporary research concerning the analysis of the endogenous emergence of systemic risk in a credit network economy and Veblen's insights. However, we will show that some specific ideas still distinguish Veblen's conception.

4. VEBLEN AND MULTI-AGENT SIMULATIONS OF FINANCIAL CRISES: A RETROSPECTIVE APPROACH

To establish one of the possible comparisons between Veblen's business cycle theory and contemporary economics, we have chosen two agent-based models as examples, which defend that the structure of aggregate behavior (*macro*) emerges from the interactions among a population of agents (*micro*). Delli Gatti *et alii* (2006) and Battiston *et alii* (2012) thus propose two models as an extension of Stiglitz and Greenwald (2003), which formalizes modern crises from the point of view of business fluctuations in a credit network. The main idea is that in modern economy, agents are linked by productive and credit relationships; the behavior of one agent then influences the behavior of the others through network connections. Moreover, credit contracts establish connections among (1) commercial banks (interbank markets), (2) firms and banks (loans market), and (3) among customers and suppliers (goods markets). Delli Gatti *et alii* consider how their conception should be differentiated from the models which focus on bank runs and financial contagion on interbank markets (Diamond and Dybvig, 1983) or asset price contagions (Kiyotaki and Moore, 1997, 2002). According to Delli Gatti *et alii*, credit networks not only enable the diffusion of financial crises, but they also amplify them, then inducing systemic crises. The authors want to distinguish themselves from the perspective which sees interlocking credit exposure as a mean of risk diversification (Allen and Gale, 2001, 2005). According to this last perspective, "*as the degree of connectivity increases above a certain threshold, crises tend to be not only more severe, but also more frequent*" (Delli Gatti *et alii*, 2006). Credit interlinkages among agents are a source of bankruptcy diffusion as "*all in all, the bankruptcy in one sector can diffuse to other sectors*

through linkages creating a vicious cycle and bankruptcy avalanches in the network economy” (*ibid.*).

An interesting issue is the distinction between two features of a credit network. The first one is the interdependence of agents’ financial conditions. This is the mechanism at the origin of what can be labeled as the *domino effect* over the space. It defines what way a business cycle is linked to firm bankruptcies and how propagation appears because agents’ assets are other agents’ liabilities. The second mechanism is the financial accelerator, *i.e.*, a positive financial feedback tending to deteriorate the situation of an agent over time. The bankruptcy in one sector can diffuse to other sectors through linkages, creating a vicious cycle and bankruptcies avalanches in the network economy. This second mechanism, which can be labeled the *avalanche effect* (or snowball effect), is due to the amplification of the connections of the output of a firm on supply and payments with other firms and from firms-banks and firms-firms credits.

We can make comparisons with some of Veblen’s early ideas. The reasons for these comparisons are that these models’ analysis of crises is based on financial factors, such as credit relations, as in Veblen’s theory. A second reason is that they are self-sustaining disequilibrium models, which is also the case for Veblen. Then, Veblen’s conception has common features with these multi-agent models. First, Veblen considers that, in the ascending and declining phases of the cycle, there is a diffusion effect by the spread of price in the exchanges or credits, which is differentiated according to the position of the agent (industrial firms) with respect to the origin of the disturbance: this is the *domino effect*, which runs along the nexus of agents. This is an effect associated with competition and credit scaffolding, which in deflation have an agent to agent effect—for example, firms disadvantaged by technical progress go to bankruptcy in chain.

Second, there also exists an acceleration effect amplifying initial disturbance and depending on expected gains or losses and their amplified effects on capitalization and market value. For example, in times of depreciation of assets, the sale of shares by a shareholder causes a new devaluation, new sales and a new devaluation in return: this is the *avalanche effect*.

These effects refer to Veblen’s well-known evolutionary ideas about the dynamics of economic processes in terms of “cumulative-causation”. But

Veblen also considered that there was an important *inertia effect* that affected the diffusion and prevented against equilibrating mechanisms⁴. This inertia is related to the specific effects of time lag and to commitments associated with contracts. First, in the process involved in the crisis, there was a change occurring in nominal value between the time of production and the time of sales, affecting profit expectations and then capitalization. Another phenomenon attributable to time is the delay in the diffusion of technical change, which negatively affects the conditions of competition, prices and interest rates for the oldest industries. Of course, there are mainly the obligations linked to the credits contracted on the previous valuation basis, which has, in the meantime, deteriorated. When interest rates decline, these commitments at a higher rate weigh heavily on firms, whose share of debt increases in the overall (new) value of assets.

The first and the third mechanisms, diffusion and inertia are dominant in real exchanges (goods) and credit relationships, while the second—acceleration—is more specific to the financial phenomenon of anticipations and economic property evaluated on immaterial assets. Then, according to Veblen, the institutional context, legal and habitual, determines what type of mechanism will prevail.

A second lesson from Veblen's business cycle theory—like agent-based models—is that it rejects the concept of economic equilibrium. According to Mitchell, *"Veblen differs from most writers in holding that, once begun, business depression tends to perpetuate itself, instead of tending to produce a resumption of activity"* (Mitchell, 1927, p. 80). In his business cycle theory, Veblen's evolutionism is expressed by the fact that a return to equilibrium is not a natural tendency of the economy and that economic trends do not always reveal efficiency. More precisely, Veblen's "cumulative causality" and "institutional inertia", which are the equivalent mechanisms of "path dependency" and "lock-in phenomena" in some contemporary evolutionary economics, are of great importance by virtue of the fact that the return to equilibrium does not occur endogenously. As Hansen summarized, *"in an individualistic, competitive economy there is good ground for believing that society cannot adjust itself to the time lags inherent in our capitalistic and money economy,*

4 This dynamics, cumulative process and inertia bring to mind Harrod's. See Dockès, "The high theory, the dynamics, the cycle (1926-1946)" (Dockès, 2017, pp. 752-811).

and so the oscillations once started, tend to perpetuate themselves" (Hansen, 1927, p. 119). A process of disequilibrium propagation is thereby driving business dynamics. This propagation or self-reinforcing process extends throughout the interdependent industrial system, the credit "pyramid" and all exchange transactions. Furthermore, this process of dissemination goes beyond expectations molded by "pecuniary habits of thought", agent "reluctance", which prevent against price flexibility or institutions that bolster the driving forces behind prices.

CONCLUSION

To conclude, we will recall the main points of originality in Veblen's business cycle theory. If we take the usual typology (exogenous/endogenous and real/monetary), it can first be stated that in Veblen's theory, exogenous shocks are amplified by endogenous factors of propagation through industrial and credit networks, and by acceleration through anticipations and institutions that are particular to market finance. If we look at the respective importance of real and monetary factors, both intervening in the process, we can assume that, according to Veblen, it is determined by the nature of institutions and its implementation in the control of the firm. And – as it seems today – the historical period of reference for Veblen was characterized by the growth, and even the prevalence, of monetary and financial factors. Nevertheless, a special mention must be given to technical progress. Although it could appear as exogenous, it depends on anthropological and cultural facts ultimately explaining the social and economic evolution. Veblen considered that innovation could be controlled by institutional patterns, which were enabled by market finance in modern capitalism. Finally, Veblen's conception echoes with contemporary market finance and innovation relationships, which could be labeled "*liaisons dangereuses*", using Laclos' formula, as in Battiston *et alii*'s previously quoted paper (Battiston *et alii*, 2012). Accordingly, these connections have been the main determinant of contemporary phases of growth, crises and downturn since the 1990's, and the well-known institutional changes occurring can be compared with those analyzed by Veblen the end of the 19th century.

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