Journal of the History of Economic Thought,
Volume 39, Number 1, March 2017

ROBERTSON'S *INDUSTRIAL FLUCTUATION* (1915): AN EARLY REAL BUSINESS CYCLE-LIKE APPROACH

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This paper re-examines Dennis Robertson's 'real' business cycle (RBC) theory outlined in his 1915 A Study in Industrial Fluctuation. *Even if, for Robertson, cycles find their origin and respond to oscillations in entrepreneurs' "rational inducement" to invest, in opposition to RBC models in which every outcome is by construction an equilibrium outcome, Robertson discusses in a traditional way the short-run consequences of such exogenous technological shocks. There are no intertemporal equilibrium phenomena in the sense of the RBC approach; cycle theory is organized, for Robertson, around a Marshallian-defined center of gravity (or long-run equilibrium state of rest). For him, the real forces are represented by the gestation period of investment, but also by investment's durability, its imperfect divisibility, and, allied with these, its intractability. These features of investment lead to excessive outlays upon capital investment, which ultimately depresses their marginal productivity. The inevitable and rational result is a downturn in the capital goods industries and the onset of a cycle.*

I. INTRODUCTION

Modern real business cycle theory (RBC) is a class of macroeconomic models in which trade cycle fluctuations, to a large extent, can be accounted for by real (in contrast to nominal) shocks. In opposition to other business cycle theories, RBC theories consider recessions and economic growth as the 'efficient' response to exogenous shocks in the real environment. Such theories differ markedly from other trade cycle theories such as Keynesian and monetarist economics that consider recession as the failure of some markets to clear and in which monetary variables have a central part to play.

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ISSN 1053-8372 print; ISSN 1469-9656 online/17/0100035-46 © The History of Economics Society, 2016
doi:10.1017/S1053837216001012

As is well known, this long and rich tradition of market failure *cum* monetary factors approach finds its roots notably in Cambridge early macroeconomics, in which Alfred Marshall, Arthur C. Pigou, John Maynard Keynes, and Dennis H. Robertson play a central role. However, and in clear opposition to the traditional Marshallian trade cycle theory, Robertson's 1915 *A Study of Industrial Fluctuation* suggests a non-monetary overinvestment theory of the trade cycle. Crises and cycles are seen to be caused by structural maladjustments resulting from overinvestment; the factors generating these fluctuations are non-monetary in nature and can be associated with inherent—endogenous—characteristics of the capitalist mode of production. In his 1915 book, Robertson always tried "to dig below the mere money surface of things" (1915, p. 212). In short, real forces only can set the cycle on its way. Productivity shocks on capital goods provide "a rational inducement to the producers … to restrict their production" (1948, p. xiv).

This paper is an attempt to present, discuss, and explain this atypical approach to trade cycle (somewhat put on a back burner by Robertson after the First World War). Explicitly linked with Continental (as opposed to Cambridge) economists (like Albert Aftalion, Arthur Spiethoff, Joseph A. Schumpeter, and, above all, Mikhail Tugan-Baranovsky and Karl Marx), the entire logical structure of Robertson's cycle theory is shown to be devised to demonstrate the recurrent succession of booms and recessions in terms of the rise and fall of the productivity of investment goods. The link with an acceleration principle (which he vehemently opposed later to Keynes's multiplier) is the other element to take pride of place in the cycle. The connection with a particular 'real' theory of interest eventually brings Robertson back to a Marshallian-type of modeling (including oscillations around a center of gravity/equilibrium state of rest), and not, like modern RBC theorists, to an intertemporal, dynamic, general equilibrium approach. The real forces are primarily represented by the gestation period of investment, but also by investment's durability, its imperfect divisibility, and, allied with these, its intractability. These features of investment lead to excessive outlays upon capital investment, which ultimately depresses their marginal productivity. The inevitable and rational result is a downturn in the capital goods industries and the onset of a cycle.

The paper is organized in four parts. Part II examines the background to Robertson's 1915 book. Part III discusses Robertson's key distinction between what he calls a shortage of saving and overinvestment. Part IV introduces Robertson's concept of 'invention' (technical progress). Part V articulates this real analysis with Robertson's use of other variables, such as expectations, (dis-)equilibrium, money, and the rate of interest. Part VI offers some short concluding remarks.

II. BACKGROUND TO *A STUDY OF INDUSTRIAL FLUCTUATION* (1915): ROBERTON'S REAL FORCES BEFORE MONEY

The 1915 theory of fluctuation, growth, and cycles put forward by Robertson is usually classified as a non-monetary overinvestment theory (e.g., Haberler 1952, pp. 85–87). Crises are seen to be caused by structural maladjustments resulting from overinvestment; in opposition to the traditional Marshallian approach, the factors generating

fluctuations and cycles are non-monetary in nature and are associated with inherent characteristics of the capitalist mode of production. Surprisingly, especially in view of Robertson's subsequent writings, money plays no substantial role in this early attempt and will come substantially into the picture only during the 1920s as a complement and an addition to this early real business cycle approach.

Following Pigou's encouragements provided during an early stage of Robertson's research on his fellowship dissertation that led to the Cobden Essay and ultimately to *Industrial Fluctuation*, Robertson always tried "consistently and thoroughly to dig down behind monetary appearances to real facts" (Pigou to Robertson 1913, quoted in Presley 1979, p. 10). Hence, and during his entire scientific career, for Robertson, the trade cycle was much more than a cycle in prices or credit. Indeed, and well before Keynes's *General Theory*, it is the fluctuation in output and employment that is stressed above all in his early works.

Very untypically for an economist brought up in the Cambridge tradition, Robertson puts the cause of the downswing of the cycle upon overinvestment as being part of the nature of the modern capitalist production process. His sources of inspiration are surprisingly nearly all of Continental origin. During the period from 1890 to 1915, Aftalion, Charles F. Bickerdike, Tugan-Baranovsky, Spiethoff, Gustav Cassel, and Schumpeter are the main proponents of such an approach. And they are all approvingly quoted by Robertson. One could also add to this impressive list the name of Marcel Labordère, an eccentric, French, amateur economist with whom Robertson (and Keynes) exchanged long and detailed correspondence. Labordère's influence is seen by Robertson as so crucial that, as an appendix to the 1948 reprint of *Industrial Fluctuation*, Robertson thought fit to include a reprint in French (!) of Labordère's seminal 1908 paper (see Bridel and Presley 1997). Robertson even offers a quote in French, summarizing, in his view, his intellectual debt to Labordère: "la crise est venue … parce qu'on a voulu faire trop vite trop de choses à la fois.…"

The common core of these theories (on which Robertson will build his own) is that, in a quasi-Marxian fashion, during the prosperity phase, overproduction takes place in the capital goods industries relative to the consumer goods industries: "that recurrent tendency of the business community to an overinvestment of its resources in fixed capital … which common observation suggests is the dominant characteristic of modern fluctuations" (1914, p. 163). Hence, sooner or later, and very rationally, a decline of the marginal productivity/utility of capital inevitably brings the downturn of the cycle. We are light years apart from monetary theories of the cycle *à la* Ralph Hawtrey, and still years away from *Banking Policy and the Price Level* (1926) and Keynes's *Treatise on Money*. His theory of industrial fluctuation builds upon a Marshallian microeconomic analysis of the causes of fluctuation in output and employment in particular industries.

In fact, and rather surprisingly, Marx appears to have provided the main inspiration for Robertson when he was inquiring into the relation between the length of life of capital and the trade cycle. Broadly speaking, Marx had argued that the occurrence of crises at ten-yearly intervals could be explained by the fact that the average life of capital was ten years. As a consequence, it was suggested, investment would proceed in a discontinuous fashion, with periodic bursts of investment every ten years, followed by years of crisis and inactivity. This thesis commanded some support from Robertson. His early statistical inquiry confirmed an average life of capital of ten years

in railways and cotton spinning, though not in the case of shipbuilding or other industrial sectors. He observed that investment was not distributed evenly over time but was clustered, and that such periodic outbursts of investment must give rise to periodic lumps of replacement investment determined by the lifespan of the capital equipment. But, if the average life of capital varied from industry to industry, there could be no inevitability in the cycle as a consequence of the Marxian theory that a burst of investment would occur in all industries simultaneously. Nevertheless, Robertson sought to enquire whether past peaks in investment activity had been characterized by replacement or net investment. He found that his empirical evidence did tend to support Marx; in the case of railways, cotton, wool, and shipbuilding, investment activity appeared to coincide with the lifespan of the machinery employed. The length of life of capital was therefore another possible cause of the wide fluctuations in activity in the capital goods industries, which were a feature of the trade cycle.

As will be shown presently, the imperfect divisibility of capital equipment and its intractability were also forces tending, for Robertson, to aggravate the depression and to add to the overinvestment taking place during the upswing. Capital equipment is not often employable in small units; hence, the investment decision necessitates a choice between buying an excessively large-sized unit of investment or none at all. As a consequence, if investment takes place, the additional output that it may eventually generate could exceed the additional demand for which it was undertaken. The reverse argument also holds true. Because of its indivisibility, investment is intractable. It is impossible in some industries to close down, or lay idle, capital equipment as a result of a shortfall in demand.

The strength of the real forces responsible for the crisis and the trade cycles is central to Robertson's argument. These real forces are represented primarily by the gestation period of investment, but also by investment's durability and its imperfect divisibility, together with its intractability. Working together during the upswing, these features (linked with his beloved accelerator principle) lead to an excessive outlay upon capital equipment, which ultimately depresses the marginal utility of capital goods relative to that of consumer goods. The inevitable results are cyclical downturns in the capital goods industries and the onset of a depression.

The best summary of Robertson's 'real' analysis is the one offered in the new introduction to the 1948 reprint of his *Industrial Fluctuation* (and one can note in passing that during the height of Keynes's postwar intellectual dominance, Robertson is still explicitly trying "to dig down behind monetary appearances to real facts," as if the *General Theory* and Keynes's monetary theory were only scratching the surface of things):

> As regards my own treatment, it will be seen that I was at pains to argue that the collapse of investment is not *always* precipitated by a 'shortage of saving', but is essentially due rather to a temporary saturation with instrumental goods, the decline in whose utility furnishes in turn a rational inducement to the producers of consumption goods to restrict their production, and that to an extent inconsistent with the desires and interests of their workpeople. I was thus led to combine my 'under-saving' propositions with 'over-saving' or 'under-consumptionist' propositions of a quasi-Hobsonian type. (1948, p. xiii–xiv)

Even if Robertson is very critical of cycle theories, which do not place sufficient emphasis on variations of output and employment (an argument he subsequently

shared with Keynes), it is necessary to examine at closer range what seems at first a strange combination of arguments and, above all, very un-Marshallian ones. It is the fluctuation in capital goods production that is significant in the derivation of Robertson's theory: it is from this real factor that the *inevitability* of the cycle stems.

III. SHORTAGE OF SAVING VS. OVERINVESTMENT

In view of the subsequent central role played by the saving-investment technique of analysis in the origin of modern Cambridge macroeconomics, it is necessary to examine in greater detail the combination established by Robertson within his trade cycle theory of his shortage-of-saving argument and his overinvestment thesis.

Although, in *Industrial Fluctuation*, Robertson defines savings as the stock of consumption goods available to finance investment—a fact of the utmost importance in the subsequent conceptualization of his theory of interest—he does not fully support the view that the shortage of real saving is responsible for all crises. Far from it.

If the availability of consumers' goods is inadequate to meet consumers' demand until the increased output of consumption goods is brought to the market, investments have to be abandoned before they have had time to bear any of their expected returns. The capital goods sector is thus plunged into depression and left with a large-sized stock of half-finished and useless investment goods. Even if Robertson readily admits this argument, he does not consider it as a necessary or unique explanation of the cause of the cycles.

For him, the downturn of the cycle mainly results from overinvestment, inducing—as shown earlier—a decline in the marginal utility of acquiring capital goods (the marginal utility of consumption goods being relatively stable), or, put in other words, a sudden drop in investment: i.e., a decline in the desire to purchase the flow of capital goods coming on the market (1915, pp. 180–181 and 240). This downturn of the marginal productivity of capital goods (linked, of course, to a drop in the interest rate as the intertemporal rate of substitution) would arise even if plenty of real saving was still available. Crises caused by a shortage of savings merely bring forward the timing of the downturn. Hence, with or without shortages of saving, the crisis is inevitable because expansion always leads the economic system to a point where "the increasing cost of instruments, or the decline in the desirability caused by their increasing numbers, would … prescribe a revaluation of the net advantage of acquiring instruments" (1926, pp. 90–91).

Thus, once again, the cycle is primarily one in the demand for investment goods linked to the high volatility of their marginal productivity. The temptation for overinvestment results mainly from the repercussions on the volume of investment of its 'period of gestation': namely, the length of time necessary for investments to be realized and for the additional supply of consumers' goods to be available.

Indeed, as an outstanding practitioner of Marshallian micro-theory, prices have a part to play in Robertson's real trade cycle analysis. Clearly, the fluctuations in output are in response to movements in prices. But the change in prices is not, however, the cause of fluctuation, but the means of *transmitting* the original cause to the volume of production. In other words, producers react to price signals that reflect the underlying cause of fluctuation.

Eventually, depressions are aggravated by what Robertson calls "the imperfect divisibility and intractability" of investment and the "longevity" of the instruments of

production. In less abstruse (and hardly poetic) terminology, it is nothing else but the producers' inability to increase their productive capacity exactly in the proportion needed to meet demand—to alter without cost the physical composition of their capital stock (capital is not 'malleable') and to ignore the influence of the life of capital goods (and hence of technological shocks) on the periodicity and the duration of the cycle. These characteristics of the capital goods industry clearly mean that fluctuations in output and employment are not only part and parcel of Robertson trade cycle theory, but are also to some extent not only necessary but also desirable in a dynamic economic system that knows technical progress, inventions, and technological shocks.

IV. THE ROLE OF INVENTION: IS IT A FORERUNNER OF THE UBIQUITOUS MODERN TECHNOLOGICAL SHOCK?

In the standard Finn Kydland–Edward Prescott approach, which still largely dominates the academic literature on real business cycle theory, technological shocks (i.e., random fluctuations in the productivity level that shift the constant growth trend up or down) are the main factors at the root of trade cycles. Robertson's random "inventions" seem to play a role very much akin to these ubiquitous technological shocks.

For Robertson, an invention that is widely applicable to industry will not only lower the real operating costs of production, bringing "a general rise in the productivity of effort" (1915, p. 126), but also increase the demand for capital goods and later the relative prices of products; this causes industrial output to change. During the final stage of depression, there is usually a decline in production costs as the productivity of labor increases and production techniques are improved. The possibility of applying an invention during the depression acts so as to increase the marginal utility of capital goods relative to that of consumer goods. Such an invention (in the Robertsonian terminology) stimulates an increase in the *expected* productivity of capital goods and boosts the demand for such goods. In some sort of dynamic analysis, the consequence is a significant change in the output of capital goods industries, with no necessary change at the beginning of recovery in consumer goods output. But, this rise in the marginal utility of capital goods is only temporary. Once the invention has been fully exploited, given the durability of capital equipment, then the demand for capital goods must fall. Hence, the offspring of the boom is depression. The most relevant feature of the cycle, therefore, is the volatility of the output of capital goods industries (linked to technological shocks) relative to that of the consumer goods industries.

But in every and all respects, and given the random fluctuations of inventions, technical progress ('inventions') administers clearly *exogenous* and random shocks to the economy. Robertson's real trade cycle considers only exogenously given technical progress.

V. EXPECTATIONS, EQUILIBRIUM, MONEY, THE RATE OF INTEREST, AND ALL THAT

In Robertson's *Industrial Fluctuation*, if monetary factors (together with other psychological and even agricultural factors) may be responsible only for undesirable changes

in output, they cannot be seen as instigating the trade cycle on their own (1915, e.g., pp. 215 and 218). Banks may respond to an increased demand for credit during expansion, but this is a *symptom* of the cycle and not a force instigating the cycle. We are still very far from the monetary core of *Banking Policy and the Price Level*[1] or Keynes's *Treatise,* and, of course, from the Hayekian monetary theory of the cycle. These short-run forces are additional to those creating overinvestment, and need the prior impact of these 'real' forces to set the cycle on its way. In other words, both monetary and psychological factors (then very fashionable) could only reinforce—and not initiate—the initial 'real' shock. Hence, and anticipating RBC's policy principles, for Robertson, a government should therefore concentrate on long-run structural policy changes and not intervene through discretionary fiscal or monetary policy designed to actively smooth out economic short-term fluctuations.

Monetary expansion or contraction cannot eliminate the cycle, and any attempt to remedy for undesirable fluctuations may well be more damaging than the disease. This conception of the role of money is the very antithesis of Hawtrey's purely monetary theory of the cycle, scathingly dismissed by Robertson in his 1913 review of *Good and Bad Trade*. This general approach was to have a very potent influence on Robertson's 'vision' when, from 1925 onwards, he came to deal more specifically with monetary factors in the cycle.

All in all, Robertson's vision of "a quasi-rhythmical movement in the level of prices, in the level of money profits and the level of employment" (1926, p. 6), as "inherent in the modern system of large-scale capitalistic industry" (1915, p. 13), makes him believe that he had severed crucial links with the Marshallian trade cycle tradition. In particular, his claim to have subjected "Say's law of markets … to some rough handling" (1948, p. xii) cannot be considered as a rejection of the whole self-adjusting supply-and-demand apparatus inherited from Marshall. A gratifying way to look at Robertson's critique would be to consider that during the downturn, demand falls below full capacity and the level of activity adapts to demand. Thus, Robertson's criticism of Say's Law would in some way anticipate Keynes's propositions in the *General Theory*. But, in the long run,[2] changes in the marginal productivity of capital and, hence, in the rate of interest would, in good Marshallian tradition, adjust saving to investment.[3] As a matter of fact, it is very different to suggest a sophisticated analysis of the inevitability and "quasi-rhythmical" movement of the cycles, in terms of short-run fluctuations of prices and employment around a center of gravity, from the rejecting altogether of the stability of this full employment center of gravity (as formalized, e.g., by Say's Law). Robertson's so-called rough handling of Say's Law seems to be nothing more than a critique of its short-run validity during each and every phase of

[1]This is the case even if, for Robertson, his 1915 *Industrial Fluctuation* argument looms explicitly very large behind his monetary and banking theory: "My object in writing [*Banking Policy and the Price Level*] was … to interweave with the mainly 'non-monetary' argument of that work [*Industrial Fluctuation*] a discussion of the relation between saving, credit-creation and capital growth" (Preface to the 1949 edition, p. vii).

[2]In which, Keynes's famous dictum having still to be uttered, we are not quite all dead yet … (for Robertson's discussion of Say's Law, see 1915, pp. 198–205).

[3]Moreover, the endless post-*General Theory* debate regarding the theory of interest among Robertson, Keynes, and Keynesian economists is clearly structured around the necessity, or not, to consider the rate of interest as the adjusting factor between what Robertson calls 'productivity' and 'thrift' (real variables indeed).

the cycle. Indeed, it seems possible to go even further and to argue that the very nature of the theory is no more than a clever application of Marshall's 'normal' versus market price distinction to the problem of the trade cycle theory.

Without using, of course, any sophisticated DSGE model, given the structure of the economy, and without explicitly reflecting *à la* RBC the most efficient possible operation of the economy, the entire logical structure of Robertson's theory is devised to demonstrate the recurrent successions of booms and recessions in terms of the rise and fall of what he calls the utility of investment goods; and it is precisely based on the long-run tendency of the rate of interest to adjust the volume of saving to cyclical variations of the demand for capital as a flow.

Similarly, the 'secondary causes' of cycles—the 'shortage of savings'—makes use of the same adjusting mechanism, the impulse coming this time not from a sudden downward shift of the investment-demand function, but from a sudden upward shift of the saving-supply function. Like in technology-based theories of real business cycles, Robertson's trade cycle theory also implies that consumers will alter their intertemporal consumption and savings decisions based on the real interest rate available to them. A temporary (negative) shock to productivity will momentarily decrease the effectiveness of workers and capital, allowing a given level of capital and labor to produce less output. And, like in modern RBCs, individuals will face two trade-offs: one is the consumption–investment decision and the other is the labor–leisure trade-off.[4]

Robertson's approach can tentatively be reformulated using modern RBC terminology. During a downturn, the opportunity set available to producers has contracted because the overproduction of capital goods has reduced producers' command over future goods from an investment of income from work (see Goodhart 1992, p. 27). Since the only alternative to work is leisure, the producers—like in real business cycles—will shift part of their work time to leisure. Indeed, Robertson offers a much more elegant literary statement of such a mechanism:

> When trade is bad [the producer] is, owing to his comfortable circumstances and his addiction to his gentlemanly pursuits such as golf and politics, readier even than the workman who is assured of full employment, and far readier than the workman who is threatened or visited with the loss of his job, to contract both his effort and his consumption. (1926, p. 20)

Again, the reduction in output is determined on the supply side, and not on the demand side, of the economy.

Without the benefit (?) of modern DGSE models, Robertson takes for granted Marshall's more rustic economic theory of the 'normal' rate of interest in particular. Anticipating Friedrich Hayek's (1933, p. 33n) and Robert E. Lucas's (1975, p. 1113) famous dictum on the need to use equilibrium analysis to build a proper trade cycle theory, Robertson goes as far as to assert in 1915 that "one cause of the obscurity which still surrounds this problem [i.e., trade cycle] is that, in the attack upon it, full and systematic use has never hitherto been made of the weapons supplied by this particular [Marshallian equilibrium] intellectual armoury" (1915, p. 11). Who said, then, that RBC theory rightly deserved a Nobel Prize for its revolutionary novelty?

[4]More below on the heterogeneity of this labor–leisure trade-off among agents.

When all is said and done, Robertson's overinvestment crisis within his 'real' trade cycle theory is characterized by a downturn of the interest rate induced by businesspeople's drastic revisions of their expectations on the 'productivity side' of the capital market; such a drop, or an expected drop, of the rate of interest fosters a fall in the volume of investment, according to the principle incorporated by Marshall in his investment-demand function.[5] Eventually, variations (or expected variations) around the natural rate of return on capital (natural rate of interest) are nothing but a signal that sums up and transmits to the body of rational investors the scattered information on the state of the capital market and, hence, on the phase of the cycle the economy is in currently. Already, for Robertson, trade cycle seems to be a phenomenon, the understanding of which calls (as mentioned earlier) for an extended use of the core of traditional Marshallian economic theory.

Paradoxically, this novel theory of the cycle was to play second fiddle to monetary theory and to the related question of the 'kind of saving' in Robertson's monetary analysis of the cycle from 1925 onwards. However, and despite this fundamental reorientation of his research program (under Keynes's influence?), Robertson never lost sight of his grand design outlined in his 1915 *Industrial Fluctuation*; he always looked at his contribution to monetary theory as a marginal refinement of "some part of the analytical framework of my *Study of Industrial Fluctuation*" (1926, p. 5).

However, it is clear[6] that, even if cycles find their origin and respond to oscillations in entrepreneurs' "rational inducement" to invest, and in opposition to RBC models in which every outcome is, by construction, an equilibrium outcome, Robertson discusses in a traditional way the short-run consequences of such exogenous technological shocks. Again, they are certainly not intertemporal equilibrium phenomena in the sense they are in the RBC approach; cycle theory is organized, for Robertson, around a Marshallian-defined center of gravity (or long-run equilibrium state of rest). The main difference, as Robertson clarifies in part II, chapter III (significantly called "The Wage and Money System"), is that, in his view, industrial fluctuations may be seen as an equilibrium phenomenon only in a non-existing society: i.e., in a cooperative society of equal copartners. In the "existing society," by contrast, fluctuations are not an equilibrium phenomenon in the precise sense that workers are off their behavioral curves when employment fluctuates above and below its full employment level (more specifically—to use a Patinkinian terminology—they are off their labor supply curve).

Robertson introduces his "type-of-economy" approach with the following words:

> For the sake of simplicity the argument of the last few chapters has been so framed as to apply primarily to a society in which industrial policy is in the hands of co-operative groups of producers supplying jointly the needful capital, enterprise and labour, and

[5]Since Robertson repeatedly invokes his debt to Marshall ("I shall make use, *without further explanation or apology*, of the processes and terminology in common use among the school of economic thought associated in this country chiefly with the name of Dr Marshall" [1915, p. 11; italics added]), it does not seem far-fetched to attribute to Robertson a thorough knowledge of Marshall's investment-demand function and its inverse relation with the rate of interest. For a detailed discussion of Marshall's investment-demand function, see Bridel (1987, pp. 18–22), which refers to Robertson (1958). On Robertson's postwar interest theory, see also Boianovsky and Presley (2009).

[6]The next three paragraphs owe their substance to insightful remarks made by one of the referees who saved the author from some oversimplified conclusions.

> exchanging their products directly with one another. Existing society, however, differs in two important respects—in the differentiation of the capitalist entrepreneur from the wage-earning workman and in the conduct of exchange by a mechanism of money and credit. (1915, p. 206)

Besides purely theoretical requirements, the abstraction that the two classes inhabiting the existing society share a common "elasticity of substitution in terms of effort" is untenable, as such elasticity is significantly lower for workers than for the "business class," implying that output and employment fluctuate according to the choices of the latter class and are imposed upon the people, by whose hands "an important class of the effort necessary for production is expended" (ibid.). This idea[7] underlies Robertson's contention that, during the cycle, "involuntary unemployment" is imposed on workers (1915, p. 210). Such a distinction does not alter but renders much more complicated the central fact that cycles find their origins in the business classes' income–leisure trade-offs. With Charles Goodhart (1992, p. 28 for various references), it is interesting to note that this systematic difference in the businesspeople's and workers' elasticities of supply and effort seems absent (to the best of the author's knowledge) from standard RBC models. In 1915, Robertson had already fully understood that when the characteristics of existing economies are introduced and recognized, his model calls for "important modifications to the theory of industrial fluctuations as hitherto presented" (1915, p. 206). Using the Robertsonian classification, one might argue that RBC theorists describe a cooperative economy and generally do not seem to consider the important modifications introduced by Robertson—in particular, the heterogeneity of the agents' labor–leisure elasticities.

VI. CONCLUDING REMARKS

Once again, the study of a modest episode in the history of economic thought confirms that, in the field of economic theory, outstanding novelties are few and far between. Without, of course, comparing their respective degrees of technical sophistication, Robertson's analytical framework and that of modern real business cycles undoubtedly have in common a non-monetary real business cycle approach linked to productivity shocks embedded in a long-run growth theory of capitalist/market economies. Moreover, in both approaches, cycles have to be discussed with the instrument of (partial or general) equilibrium: recessions and economic growth are the agents' 'efficient' and rational response to exogenous shocks in their 'real' environment. Eventually, both approaches use a mixture of inductive and deductive methods.

[7]Behind this heterogeneity of elasticities appears very clearly Robertson's quasi-Marxian critique of a wage-earning system: "No solution … can be completely satisfactory which aims merely at the fulfilment of the policy which the enlightened self-interest of the business classes would dictate, and neglects the genuine want of harmony between that interest and the interest of the working class" (1915, p. 211). The fact that the business class can prevent the workman "from working as much as he wishes to" amounts to nothing else but to impose "involuntary unemployment" on wage-earners (1915, p. 210).

These similarities between the logic of two approaches, separated by nearly a century of economic theorizing, raise, of course, a host of questions on the nature and progress of economics. Four 'big' interrogations raised by this modest essay are all that can be suggested here:

- Why did Keynesian macroeconomics literally kill real trade cycle even more than monetary trade cycle theory did?
- How did such an interwar breakthrough partly emerge from a quasi-Marxist or at least Continental-inspired theory?
- Could there exist 'contextual' links (then and now) with the 'real' world to explain ups and downs of such a 'real' approach?
- Or, could such a periodic return to 'real' explanations of trade cycles also be linked to the intrinsic non-monetary nature of Marshallian and Walrasian basic theoretical models?

As a matter of fact, trying to answer such questions would imply a full research program far beyond the present article and its author's abilities.

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