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The causal principle, the explanation of crises, and the rhetoric of early business cycle theories

— Abstract —

This paper examines an aspect overlooked in the history of the shift of emphasis from theories of crises to theories of the cycle. This story cannot be reduced to the discovery of a fact: the cycle had to be fabricated via a reconceptualization of crises, and a revision of the principle of causality governing the epistemology of crises and cycle theories. The paper focuses on the latter aspect, by showing how the main protagonists in this transition moved from a notion of crises as individual events, each explained by a multiplicity of peculiar causes, to the search of a common cause (or set of causes) triggered by an occasional event, and exploring the implication of this turtle turning.

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1. Introduction

Some aspects of the shift of interest from crises to cycles have been well studied in the literature. In particular, the stories of the rising awareness of the return of crisis, the recognition of their cyclical nature, the characterization of phases in these cycles, the estimation of the period of fluctuation, the formulation of the first (partially) endogenous explanations of crises, have all been fairly accurately described.1

The first stage in the transition was the recognition that crises tended to come in ‘waves’ (Tooke 1823, I:VI), mainly described in terms of prices rising and abruptly falling instead of gently gravitating towards their natural level.2 The distinction of a number of phases regularly succeeding each other followed: Lord Overstone (1837) and Longfield (1840), for instance, listed ten, but quickly the list boiled down to three (Briaune 1840, Juglar 1862), four (Mills 1868) or five (White 1882, p. 525). Next, estimates of the average period were formulated: an anonymous American reported in 1829 that ‘an opinion is entertained by many’ that the average period of these ‘fluctuations’ that ‘do take place, and […] always will take place in countries, where paper money has been extensively introduced’ is about 14 years; in 1833 John Wade estimated it in about seven years, while a few decades later most writers agreed on a period of about seven to 11 years (summaries of the main positions are given in Jevons (1878b) 1884, pp. 222–4, and Miller 1927, pp. 192–3). The seminal intuition that the explanation of the whole sequence requires phases to be linked to each other seems to be due to Juglar (1862), while

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1 I am grateful to Giorgio Colacchio, Cécile Dangel-Hagnauer, Dennis O’Brien, Warren Samuels and an anonymous reader for helpful comments on a first draft, and to Juan Manuel Blanco for help with some translations from French.
2 The literature specifically dealing with these points, however, is not abundant. Most accounts of the history of the period, in fact, focus on the broad picture (the gluts debate, Say’s law, Marx, occasionally with some reference to J. S. Mill, Juglar and Jevons, before passing to the great theorists of the cycle at the turn of the century) while omitting the contributions of the ‘minor’ writers who nevertheless made the transition from crises to cycle theories possible. These details, however, are discussed by Jevons 1878b (taken up by Boccardo 1879), Bergmann 1895, Miller 1927, Schumpeter 1954 and Hutchison 1957. There are also a number of writings focusing on specific authors or problems.
3 It must be added that some early explanations, or at least descriptions, of cyclical processes did not focus on crises but referred to the cycle as a whole: Overstone (1837) had a cycle in mind (see O’Brien 1994), Wade (1833) and Wilson (1839, 1840) formulated explanations of the alternations of good and bad trade in terms of cob-web like mechanisms (see, respectively, Besomi [submitted] and Link 1959, pp. 103–26). Such approaches, however, were rather sporadic.

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recognition of some endogenous cyclical mechanism goes back at least to Tooke (1823), Wade (1833) and Wilson (1840).

These steps, important as they are, cannot however account for the whole story in the transition from theories of crises to theories of the cycle. This was not a simple recording of the fact of crises, their periodicity, their approximate regularity, and of a morphological characterization of their phases and the linking them into a chain. At least two other ingredients, apparently overlooked by commentators, were fundamental in the transition: the very notion of crisis had to be revised, as well as the conception of causation of crises. This papers deals with the latter problem.\(^3\)

The mainstream approach to crises in the first half of the XIX century consisted in explaining them as individual occurrences, caused by something extraneous to the proper working of the system such as wars, political unrest, exceptional famines or overabundance of crops, speculation, monopoly, tariffs, and other external causes or internal frictions.\(^4\)

A small (but growing) number of authors did not accept this view, and suggested instead that crises were related to each other. To win their case, these writers could not simply rely on the evidence of returning crises, or even on the evidence of some regularity in these recurrences. Their adversaries, in fact, could always find some event or constellation of events —either drawing from the previous lists or creating new ones\(^5\)— capable of generating and explaining each new crisis. The view that crises are not individual events but are connected to each other within a wider and persistent pattern intrinsic to the functioning of capitalist economies required a radical re-interpretation of the causal nexuses at work within the economic system. While of course nobody denied that events such as wars and famines played some part, their precise role was redefined.

\(^3\) Some aspects of the revision of the notion of crisis are discussed in Besomi [forthcoming 1].

\(^4\) The following passage, summarizing a discussion having taken place in December 1857 at the Société d’Économie Politique on the causes of the current crisis, is illustrative of the variety of causes that could be advocated in order to explain one single event: “Mr. Ch. Renouard, adviser at the Court of Appeal, summarizes as follows the main causes of the crisis: the famine, first cause independent of people; —the war, that caused direct and indirect losses and troubled the social economy; —the excessive development of public works; —the spirit of speculation which, by its nature, always reaches extreme limits; —the moral state of the country: having disregarded too much the noble concerns with arts, science, politics and the grand ideals, it too exclusively engrossed itself into the concerns of business, of physical pleasures and of luxury” (Société d’Économie Politique 1857, p. 473).

Similarly, in his entry on “Crises Commerciales” in the Dictionnaire Universel du Commerce et de la Navigation, Joseph Garnier discussed as follows the causes of crises: “The causes that can be assigned to crises are numerous and different in character. We can classify them all under the following headings: The political and social agitations, from which worries about the future and lack of safety result; Wars, and the consequent re-establishment of peace; Famines; the scarcity of crop in important raw materials; any catastrophe; abundance. The slowing down of consumption, with its consequences on exchange and production; The rapid increase in production due to the excitement in the spirit of enterprise and to speculation fevers, which incite to badly conceived operations. The diversion of capitals due to the development of public works or to new large enterprises; The development of credit, and the monopoly of credit institutions; The rapid increase of the quantity of precious metals, gold or silver; The sudden increase in tariffs, national or foreign; The backlash of foreign crises” (Garnier 1859, p. 921).

\(^5\) In 1895 Bergmann had listed 280 causes of crises referred to by previous writers.
Rather than being the primary cause of each individual crisis, these events or impediments were interpreted as subordinate causes or triggering events, while a deeper, common cause to all occurrences of crisis was sought. In other words, the kind of causal reasoning as applied to crises was turned on its head.

The transition from the theories of crises to the theories of the cycle was thus characterized by the momentous adoption of the principle that similar effects must have a similar cause. While in several cases this principle was tacitly espoused by early contributors to the theory of cycles, this change in the mode of explanation of the phenomenon was explicitly discussed by a number of authors who had applied it—including those who are now recognized as having been the main characters in the history of cycle theories—, and in several case it was also used as a rhetorical device to contrast (or even ridicule) the opposite view.

This paper begins (Section 2) by illustrating how this change took place, and was commented upon, in the writings (presented in chronological order, from 1840 to 1879) of seven authors: Jean Edmond Briaune, Isaac Preston Cory, James Anthony Lawson, Charles Coquelin, Clément Juglar, John Mills, and William Stanley Jevons. These writers could not be further apart in some respects: they had different educational backgrounds (most were educated as lawyers, one as a medical doctor, one was trained as a banker); four of them at the time of the writings discussed here could be considered political economists, although with fairly different approaches, degrees of commitment to the discipline, and of years of practice; they were active in three countries (England, Ireland and France); and they had no contact with each other, except Mills and Jevons who are known to have talked directly of the subject of crises. Yet they all argued that the proper, scientific explanation of crises ought to focus on their common cause; that this cause undermines the system’s stability; that the occasional circumstances seen by other writers as the originating cause of individual crises should be downgraded to simple precipitators of the events and as modifiers of the actual path followed by the economic system; and they used this argument as a rhetorical device to reject or ridicule the opposite thesis.

The connection between these authors therefore does not lie in an historical line of direct filiation or of continuity, but in their view on the nature of the scientific explanation of the phenomenon of crises. The purpose of the paper is to evaluate the place of their viewpoint in the shift of perspective from crises to cycles, with particular regard to its implications on the exogenous/endogenous distinction, the role of the system’s instability, and the part played by accessory circumstances. The latter is examined in particular in Section 3.

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6 Biographical notes are appended to the presentation of each of these writers’ views.
7 Juglar cited Coquelin in 1863, and only referred to Briaune in 1891.
At the turn of the century, the view that crises should not be considered as disconnected events but succeed each other with some regularity and due to the recurrence of the same fundamental conditions was about to win acceptance. A number of theories of the cycle, as opposed to theories of crises, flourished in those years. Some of their authors looked back at the history of their subject and commented on the transition which they were leading and witnessing. Section 4 reports how two of them (Aftalion and Mitchell) insisted that the development of the discipline required a change in the status of crises, now to be understood not as breaks in the ‘normal’ course of smooth economic progress but as phases in the different kind of ‘normality’ these writers were describing, consisting in fairly regular alternations of good and bad times.

When crises were seen as the abrupt explosion of disequilibrating forces, the phenomenon required an explanation: accordingly, the theories of crises focused on identifying the causes of crises, either by referring to some specific event or by identifying some common cause that would also explain the recurrence of the phenomenon. But when crises were interpreted as phases in a cycle, the need for an explanation moved from the crises to the entire cycle: the problem was no longer that of understanding a sudden breakdown, but of explaining why the system persistently oscillates rather than settling in an equilibrium state. Section 5 describes how, accordingly, the quest for a causal explanation of crises was abandoned and a different way of theorizing the cycle emerged in the interwar years, relying on functional rather than causal relationships.

The topics discussed in this paper are tangential to a number of recent discussions in the history of statistics and econometrics. Sandra Peart, in a paper contrasting Mill’s and Jevons’s attitude in applied economics, points out how Mill argued that historical understanding is intrinsically multicausal while Jevons distinguished between fundamental causes and disturbances. Peart argues that while Mill’s view deterred statistical applications, Jevon’s departure from the multiple causality approach opened the way to the use of statistical methods in applied economics, which he himself pioneered (Peart 1995). Harro Maas and Mary Morgan, in a paper on the history of the application of graphical methods in British XIX century economics, argue that graphical representations of time series presupposed that historical events, with all their specific features, be reduced to some common dimension and interpreted as data. Again multiple causes had to be divided into explanatory and disturbing causes (Maas and Morgan 2005). Philippe Le Gall, in a paper on the ‘natural econometrics’ of Jean-Edmond Briaune (the first of the writers discussed here), argues that the distinction of explanatory causes and disturbances was instrumental in the formulation of natural laws, reflecting the natural order on which Briaune’s view of the world was based (Le Gall 2006). Such a convergence points at the central role played in the development of both quantitative methods and in the research on business cycles by the rejection of multiple causality in favor of a nomic interpretation of
causal determinations of events, and probably contributes to explain why the inquiry on cycles soon acquired quantitative features and why a relevant branch of quantitative studies focused on cycles.

2. Crises and the causal principle

Causality is an extremely controversial subject, on which there are fundamental disagreements between scientists and between philosophers. Nevertheless, the writers to be discussed in this section would have broadly agreed on a basic proposition, namely, the formulation of the causal principle affirming that similar causes produce similar effects. And they would have gone a bit further, by asserting that this principle is one of the features of scientific explanation. Accordingly, they dismissed as unsound the opposite approach. In this section I will illustrate how these propositions drew their approach to the explanation of crises, consisting in the quest for a cause common to all instances and capable of accounting for their recurrence. It will not be my concern to inquire into the specific cause each of these writers thought to lie at the heart of crises and on the specific mechanisms and relationships on which they focuses: on this, they all differed, in spite of sharing the general view of how the phenomenon should be explained.

I will not enter the logical difficulties surrounding the concept of causation. A general warning is nevertheless necessary. The terminology used by these authors is occasionally inconsistent: similar concepts are sometimes given different names (for instance ‘proximate’, ‘occasional’, ‘determining’ causes), or the same name is given to altogether different concepts.\(^8\) The distinction between ‘cause’, ‘condition’ and ‘circumstance’ was not well-defined, and some of our writers used the terms interchangeably and generally failed to use language in a fully consistent way, thereby adding additional confusion. This is partly due to the fact that the writings examined here and in the following sections span through three quarters of a century (1840–1913) and emanate from the pens of people quite far apart in their formation and interests. Pinning down the terminology to the precise philosophical tradition to which each writer belongs would not be easy, in part because the background of some of them is known only in general terms, most of them were subject to multiple cultural influences, and at any rate the philosophical thought on causality was itself changing very quickly. The writers’ own terms are thus used in the description of their view, with some clarifications when possible, relying on the exposition of the context for the illustration of their view. Although it would admittedly be an interesting exercise, this section is not much concerned with the specifics of each author’s view, which would require a more precise

\(^8\) ‘Proximate’ cause meaning different things in the medical language to which Juglar referred —he fortunately avoided using the term himself— and in the language of several other writers considered here: an anatomical abnormality with which a disease is associated for the former (Carter 1999, p. 12), or a ‘subordinate’ cause for the latter. This subordinate cause, in turn, was called to play different roles by different authors: some meant by proximate causes the events setting off the crisis, others referred instead to events modifying the course of the crisis.
inquiry into the precise meaning of each of the concepts they use, but with the emergence, consolidation and implications of an epistemic argument claiming that the scientific explanation of crises must refer to a common cause rather than be explained with reference to *ad hoc* causes.

2.1. Jean-Edmond Briaune, 1840

Already in 1840 Briaune,⁹ who explicitly wrote about the “periodicity of commercial crises” (p. 2), suggested that crises are not to be discussed as disconnected individual events but are better understood as a succession of related occurrences. He therefore had to face the problem of rejecting the predominant individual explanation of crises emphasizing in their stead a common explanation. He did so by mocking the adversaries and bringing home an epistemic point at once. One of the points of view to be rejected was the ‘popular preconceptions’ (‘préjugés populaire’—shared, in reality, by renowned economists) ascribing crises to ‘political causes’. In Briaune’s view, the political and institutional setting can only be a secondary cause (“pas immédiate”), making things worse or better (“cause preservatrice ou aggravante”), while the fundamental cause must be sought elsewhere, on the ground of the “general principle that seeks the same cause for a series of similar effects”. The destructive part of Briaune’s argument consists in a long list of political causes that should be expected to have produced precisely the opposite effect than the one actually observed: for instance, “one should profess that the prosperity from 1820 to 1827 was due to the changed electoral law, to the suspension of the freedom of the press and of individual freedom; to the riots in the schools, to the Paris, Saumur, Bedford and Rochelle conspirations that were its consequences; to the Spanish war, to the compensation laws, to the primogeniture rights, and to sacrilege, which were its continuation and complement”. The other point of view to be rejected was the ascription of the last crisis to an excess of production, or to credit, or to stock market speculation. Criticizing these views, Briaune expounds the positive principle that should guide the reflection on the causes of crises:

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⁹ The son of a lawyer and (later) a judge, Jean Edmond Briaune (1798-1885) studied law in Paris and practiced in Versailles from 1825 to 1827. Then he started managing a farm and became interested in agricultural problems and policy. In 1830 he became the principal of the Grignon school, where he also became the first teacher of rural economics (1833), and kept farming. He became involved with regional politics: in 1839 was elected *conseiller général* of the Indre region, and in 1841 he took over from his father and served as Justice of the Peace in Ecueillé. After his book on crises, *Des crises commerciales. De leur causes et de leur remèdes* (Paris 1840), he published several articles in the *Journal d’Agriculture Pratique*. With the 1848 Revolution he lost both his Justice of the Peace and his conseiller général seats. He repeatedly argued for the stabilization of corn price by means of the constitution of reserves, in particular in his better-known opus *Du Prix des grains, du libre échange et des réserves* (1857). Later in his life he also wrote on electoral reform. On the various aspects of Briaune’s work as farmer, agricultural economist and agronomist see Simonin 2006, which includes a biographical chapter by the editor from which the data in this footnote have been drawn, a bibliography of Briaune’s writings, and a chapter, also by Simonin, discussing Briaune’s theory of crises in the context of the writings of French XIX century writings on the subject.
If these were the true causes, they must have had impact on the crises of 1811, 1817 and 1827, for the periodical return of the same affliction necessarily implies the existence of identical and permanent causes. Now, nobody would assign to past crises the supposed origin of the present crisis; it is indeed rather illogical that similar effects, obviously linked to each other, are always attributed to different accidents. Against the general principle that for a series of like effects the same cause must be sought, one should bring irrefutable evidence; but such a proof is still missing. (Briaune 1840, pp. 3–4).

The common premise Briaune identified was a sudden halt in consumption, the cause of which he thought to be the periodical increase in the price of cereals, which hits workers first, diminishing their consumption of other goods; successively, “the illness grows in geometrical proportion” by spreading to other branches of trade because of the solidarity of commerce (pp. 5–13).

2.2. Isaac Preston Cory, 1842

In a pamphlet discussing the “causes of the present distress”, Cory10 distanced himself from the current diagnoses of the origin of the depression by arguing that the event should be considered as the consequence of a ‘preliminary evil’ common to the same recurrences of distress:

A variety of causes has been assigned to account for this depression, and as many remedies have been proposed to obviate it. The national debt, taxation, the currency, the unlimited power of the Bank of England over its issue, the excess of population, the corn laws, the oppressions of the millowners, have each their advocates, who would fain persuade us, that an alteration of some one or more of these would give relief and restore prosperity.

It is not my intention to deny, that each and every one of them have their effect, and may, in some degree, influence the state of trade: but in the following pages I propose to avoid, as much as possible, the discussion of any of these subjects which have been worn threadbare, and upon which every one has made up his mind; while I would direct attention to what I humbly conceive to be a preliminary evil, much more extensive than all of them put together—a canker in the very heart of our trading prosperity, which is ever and anon producing the same recurrences of distress—temporary they may seem, but which, I fear, are rather of a periodical nature, like the returns of the shivering fits which precede the dissolution of the body by an internal ulcer. (Cory 1842, p. 3)

In Cory’s view, all crises have a common premise, more fundamental than the various circumstances that may intervene and are capable of altering the course of the panic but cannot be deemed to be ultimately responsible for them. He blamed competition: not the healthy, fair, open competition among traders, but “a system of fraud, rapacity, and gambling, which is now carried on to such an extent, as to have undermined the foundations of the national honesty, and, unless checked, can only end in the overthrow of our national prosperity and happiness” (p. 5). Interestingly, Cory rejected one of the

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10 Isaac Preston Cory (1801/2—1842) was educated at Clare College and Gonville and Caius Colleges in Cambridge, where he was elected to a fellowship in 1824. He was a lecturer in Hebrew (1839–41), and had also been called to the bar at Lincoln’s Inn in 1832. He compiled Ancient fragments of the Phoenician, Chaldean, Egyptian, Tyrian, Carthaginian, Indian, Persian, and other writers (2nd ed., 1832; rev. ed. 1876) and published a Practical Treatise on Accounts (1839) (Curthois 2004).
explanations of crises as confusing the “proximate” cause of crisis with the “fundamental and efficient” cause of distress, introducing a distinction upon which later writers elaborated much more in detail.

2.3. James Anthony Lawson, 1848

An accurate discussion of the latter point is found in a paper “on Commercial Panics” read by James Anthony Lawson11 before the Dublin Statistical Society (of which he was the Secretary at the time), printed as a pamphlet by the Society (Lawson 1848), and reprinted in the Bankers’ Magazine (1848a) and in Hunt’s Merchants’ Magazine (1848b).12 There he applies to crises the general reflections on causality, science, and method expounded a few years before in his Five lectures on Political Economy. There he began with a discussion of the problem of how to distinguish, among many possible causes, the accidental and the essential:

All the phenomena which we are called to investigate and trace to their causes are the work of time; innumerable circumstances have co-existed antecedently to their production, and how are we to say whether it is to these combined, or to some, or to one, that the effect is to be attributed? Experiment is impossible; the magnitude of the interests involved forbids us to tamper with them for purpose of experiment, even if we had the power; what then is to enable us to discriminate between the accidental and the essential circumstance, and to assign to each of the antecedents its due influence in the production of the result? Obviously, nothing can enable us to do this but the faculty of close and careful analysis, which scientific habits only can confer, leading us by abstract reasoning, applied to realities, to see what circumstances are likely, and what inadequate, to bring about certain results, thus enabling us successively to negate each illusive theory till we arrive at the simple truth (Lawson 1844, pp. 11–12).

A few pages later he discussed the causation principle with reference to the uniformity of nature. Reporting that Brown, in his Philosophy of mind (1820; the 13th edition had been recently published, in 1842), had argued that our belief “in the uniformity of the sequence of antecedents and consequents” is innate, and on it all sciences are founded, Lawson commented that whether it is innate or not, such a belief certainly exists:

if we observe by experience, that a certain assemblage of circumstances is followed by a particular result, we believe that whenever the same circumstances are again assembled, without the introduction of any new circumstance, to control or modify their operation, the same result will follow; and this belief is entertained by us equally, and with the same foundation, in the moral and social,

11 James Anthony Lawson (1817–1887) was educated at Trinity College in Dublin, where he was elected a scholar in 1836, was a gold medalist in 1837 with firsts in ethics and logic. He graduated BA 1838, LLB 1841, and LLD in 1850. He was Whately professor of political economy at Trinity (1840–45). Meanwhile he was also called to the Irish bar (1840) from Gray’s Inn. He took silk in 1857, became the legal adviser to the crown in Ireland in 1858, in 1861 was appointed solicitor-general for Ireland and in 1865 became attorney-general. He represented the constituency of Portarlington from 1865 to 1868, then was appointed fourth justice of the common pleas, and successively transferred to the Queen’s Bench Division in 1882 (Boase 2004).

12 Although Lawson’s pieces are rarely cited, the versions in the Bankers’ Magazine and in Hunt’s Merchants’ Magazine are likely to have been widely read by his contemporary. The latter magazine, for instance, was referred to by Juglar in the scanty literature list at the end of his 1863 entry in Block’s Dictionnaire Général de la Politique.
as in the material world, and constitutes the basis of all scientific inquiry in both. (pp. 16–17)

Natural and social sciences “are alike based upon the belief, that similar antecedents will produce similar consequents” (p. 18). The difference between political economy and natural sciences is that in the former more numerous, complex and varying causes are at work, and new ones are likely to enter in the combination of causes and thus bring about different results, eluding the most vigilant observation (p. 19). But the relationship between cause and effect remains constant: otherwise no science would be possible: we would only have a number of isolated facts from which we could draw no inference nor establish connections with other facts: “and the social world would be chaos, in which no element of order could be discerned, and whose phenomena it would be vain to attempt to reduce to general laws” (p. 20). As nothing in the universe is an accident, we are convinced that there is some order, “ordained to carry out the great purpose of creation; and we therefore believe, that this order will continue” (p. 20). Thanks to “the great principle of uniformity, which pervades every part of the universe” (p. 23), by tracing effects back to their causes the political economists “enables the statesman to alter and ameliorate the conditions of the people, by modifying those circumstances, which the Political-Economist has shown to be the source from which certain results spring, and at the same time correctly to anticipate the consequences of any new measure he may introduce” (pp. 22-3).

In his articles on crises, Lawson wrote of commercial panics as “diseases to which the body politic is subject—not chronic diseases, but epidemics as regular in their recurrence as influenza itself, though only at longer intervals”. He noted that “we shall find these periods of commercial distress regularly and periodically recurring in cycles of from five to seven years” (1848, p. 2). Lawson’s discussion is based on the epistemic postulate that these events should not be considered as exception to the ordinary rules of political economy, but as fully consistent with them: “If we have any faith in the truth or certainty of science, we must feel fully persuaded that the truths are of universal application; that they cannot be true at one moment and false at the next; that they are not to be taken up in smooth seasons, and laid aside in rough ones”. The explanations of panics advocating the extraordinary nature of the case are thus fallacious: the recourse to wars, famines and other anomalous circumstances are used, by “indolence and ignorance”, as a “short and easy solution” to “evade [the inquiry] altogether” (ibid.). Moreover, such alleged causes of a number of the panics could not have been large enough to explain the havoc wrought by the panic themselves: “for instance, the breaking

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13 Lawson specified that crises are a phenomenon limited to commercially advanced countries: they “are diseases which exhibit themselves only in a very civilized state of society, where trade and commerce flourish, where there is commercial enterprise and spirit; they occur in England, France, Holland, and the United States of America; but I do not find any account of such in Spain or Portugal” (1848, p. 2)
14 Lawson 1848, p. 1; the passage was withdrawn from 1848a and 1848.
out of the war in 1793, that alone never could have occasioned commercial embarrassment if commercial affairs had been in a sound state up to that time—it might have limited the future operations of trade, or checked its advance, but it could not entail the universal ruin which ensued”; similarly for a deficient harvest. He concluded:

We must therefore look beyond the proximate cause or the occasion of the panic to find its true cause; and I think from the details I have given you, you will be prepared to anticipate the conclusion to which I have arrived, namely, that it is not attributed to a sudden check given to an extensive and long continued trade upon credit—this check may proceed from the various causes which we have seen gave occasion to the panic, or by any other circumstances which cause a revulsion in the public mind, or cause a disinclination to continue to give credit; and it will be found that when the system of trading on credit has been extensively pursued, a very slight obstacle is sufficient to overturn the entire system (Lawson 1848, p. 4).

Lawson’s distinction between ‘proximate cause’ and ‘true cause’ is thus used to distinguish between a cause common to all events and the occasional circumstances that actually give rise to the panic; this, however, is prepared by the vera causa having generated enough instability in the system so that a small event can give rise to disproportionate effects. The latter is an argument upon which later writers further elaborated in the same context. It should also be noticed that this passage, taken in conjunction with the epistemic premise cited above, seeks to explain the true cause as intrinsic to the ‘normal’ operation of the economic system and as needing an explanation consistent with the rules of political economy, while the proximate causes are extraordinary circumstances to be treated as exceptions from the viewpoint of theory. Lawson is thus laying the premises for the distinction between endogenous and exogenous approaches to crises, referring not only to the relatively trivial distinction between the internal or external generation of the event, but between what is internal and external to the theory’s compass: a conception surely quite ahead of his times.

2.4. Charles Coquelin, 1852

Coquelin\(^\text{15}\) starts from the observation that in the first half of the nineteenth century crises have become “almost periodical”\(^\text{16}\) and have acquired a character of

\(^{15}\) Charles Coquelin (1802–1852) studied at Douai College and at the Paris Faculty of Law. He founded a journal of commercial law, which however did not last long (1827–29). He practiced as a lawyer in the province, but soon turned towards political economy. He returned to Paris in 1832, and for a few years worked as a journalist for different papers, also discussing economic issues: he wrote on commercial societies, on customs reform and on economic crises, defending the free banking point of view. Following one of his articles on commercial freedom in 1846, he was invited to join the managing board of the Association pour la liberté des échanges; he was also the president of the Club de la liberté du travail, for which he ran as a candidate to the Assemblé constituante in 1848 under a liberal and anti-socialist banner. With Bastiat and other members of the Club, he founded a short-lived liberal popular paper, Jacques Bonhomme. From 1847 he regularly wrote for the Journal des Économistes, and later he was entrusted with the editing of the Dictionnaire de l’Économie Politique (1852), for which he also wrote several entries including one on commercial crises. In 1848 he published Le crédit et les banques (Paris: Guillaumin), where he also discussed crises (for an obituary see de Molinari 1852)
suddenness they did not have before. While in the past crises were always due to famines, wars or revolutions, and it was therefore easy to understand their causes, modern crises can arise ‘spontaneously’, so to speak, and therefore require a different kind of explanation: the cause of the disorder is “obviously not external, but inherent to the very operations of commerce or to the intimate nature of credit” (1852, pp. 527, 528 and 533). The development of credit, which in the most advanced countries supports most commercial operations, is indeed the common circumstance permitting the occurrence of these crises. It also explains the suddenness of crises, as it makes the system intrinsically unstable: credit, in fact, requires mutual confidence, and if for any reason (“une commotion quelconque”) doubt arises as to the future respect of obligations, the whole system of commerce suddenly collapses. The evil spreads like wildfire, and envelopes in little time the whole commercial world. The notion of a ‘spontaneous’ insurgence of crises, made necessary by the observation of their almost periodical return, calls for an endogenous explanation based on some mechanism giving rise to instability.

Similarly to credit, also speculation and misdirected production can be ‘determining causes’ of crises. Deeper down, however, crises and their common feature must have a “general and common cause”, and it is this “first cause” (cause première: pp. 530 and 531), or “originating cause” (cause originaire: p. 533), that must be sought, as opposed to the ‘determining cause’ commencing each crisis. Coquelin maintained that this ultimate cause is the existence of privileged banks and their way of operating: this cause operates constantly, so that its effects (a glut of capitals) slowly but regularly cumulate so that after a time the effect produced (the crisis) is the same, whether the determining cause is an excess of speculation or an abuse of credit (p. 533).

Coquelin uses this argument to reject two alternative explanation of crises, Say’s and Wilson’s, who both blamed the 1825 crisis on speculation. To Say, he objected: “this explanation is obviously not sufficient, for one still has to ask what was the primum mobile, the originary cause of this abuse [an excessive emission of banknotes] and of the adventurous speculations that followed” (p. 529). Against Wilson’s explanation based on different causes of speculative manias (exploitation of foreign mines, on land property at home, on various companies, etc.), Coquelin argued:

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16 The expression “almost periodical” recurs three times in the article on “Crises commerciales” (1852, pp. 526, 528, 530), and also occurs in previous writings (e.g. 1850, p. 219; in 1849, p. 374, Coquelin dropped the adverb).
17 “Le mal se propage rapidement comme une trainée de poudre”. The analogy is interesting, as it takes an explosive charge as a metaphor for instability in a similar way as Juglar and Jevons later did (see sections 2.5 and 2.7).
18 This part of Coquelin’s argument was taken up and translated into Italian a few years later by Boccardo, who began his discussion of the causes of crises by distinguishing between external and internal ones, the former being those susceptible of scientific inquiry. Boccardo also agreed with Coquelin’s conclusion that the monopoly of central banks is the ultimate cause of crises and their periodical recurring (Boccardo 1881).
It will be agreed that it is hardly possible that the same disposition became manifest in so many different directions at once, if it was not aroused by a general and common cause. It is therefore this prime cause that has to be specified, and [Wilson’s argument] fails to do this. There is no doubt that abuses of credit became apparent at the approaching of each of the crises broken out since the beginning of the century, and that they are a determining cause. There is also no doubt that excessive speculations have characterized each of these epochs and played an important part in the disorders that have erupted. But where the abuse of credit comes from, and why the speculative mood at some point takes possession of all minds, still remains to be explained. To say these are erupting frenzies tells us nothing and is a mere use of words. It is not natural that this kind of disease breaks out without being provoked. And the existence of a hidden cause, operating constantly, is finally demonstrated here by the almost periodical return of these calamities (p. 530).

2.5. Clément Juglar, 1862

Rhetoric and epistemic arguments are wonderfully married in Juglar’s argument against the interpretation of crises as individual events and for their understanding as part of a larger phenomenon. He was aware that he had to play two games at the same time if he wanted to win his case: on the one hand, he had to subsume all crises under the same scheme in spite of the objective differences between each special occurrence, by reinterpreting the role of the special events and of the general premises of crises. On the other hand, he had to counter all his opponents’ arguments at once.

Juglar handled this challenge very effectively. The first edition of his book began with a discussion of the term ‘cause’. Juglar took up the distinction, rooted in the medical reflection of the time, between ‘determining causes’ (‘causes déterminantes’) and ‘predisposition’ (‘prédisposition’). He did not explain the first term, but his explanation and exemplification of the second echoes the wording of the entry on ‘causes’ in the Dictionnaire de Médecine Usuelle, published by the medical circles in Paris where Juglar was educated:

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19 Clément Juglar (1819–1905) was trained as a medical doctor in the tradition of the anatomico-pathological school in Paris, where he took his degree in 1846. He practiced for a while, but within a few years he was fully engaged in economic studies. His first contributions concerned precious metals (1850), tariff reforms (1851), and population (1852; he occasionally wrote on the topic also later in his life, suggesting that crises affect population fluctuations). His views on crises were outlined in an article for the Journal des Économistes in April and May 1857, and expanded in a mémoire for the Académie des Sciences Morales et Politiques, delivered in 1860 and awarded the Académie’s prize. The book was published in 1862; a second, heavily revised edition was published in 1889. Most of Juglar’s publications consisted in further elaborations of his views on crises and on the related monetary phenomena, brought up to date with more and more data. He was active till the end of his life, during which he was member of various learned societies, in particular the liberal Société d’Économie Politique, the Paris Statistical Society, the International Institute of Statistics, and succeeded Courcelle-Seneuil as a member of the Académie in 1892 (See De Foville 1905 and Beauregard 1908).

20 The passages cited in these paragraphs also appeared in the second edition, but as the second chapter (1889, pp. 27–29).

21 In his insightful essay on the influence of Juglar’s medical studies on his theory of crises Groenewegen emphasized the medical origin of Juglar’s notion of predisposition and caught well its meaning and implication without, however, noting that the concept was contrasted to the ‘determining cause’, which also plays a part in the methodology and the rhetoric of Juglar’s construction (2001, pp. 122–3). The importance of this point for Juglar’s theory of crises is also stressed by Simonin (2006a), who pointed out the similarities with Briaune on this point.
We will thus limit ourselves to the two main divisions or classification of morbid causes. Some of them prepare to illness; most of them belong to the very organization [of the system]. They are called *predisposing* [causes]. Others, most of which are external [to the system], cause the predisposition to break out and produce the disease; they are called *determining, or occasional* [causes]. For example, consider a man with a voluminous heart, abundant blood, a short neck. His complexion is the predisposing cause to apoplexy. If, in an outbreak of rage, he is struck, this emotion is the occasional cause. Without predisposition, the morbid influences are powerless, but the signs revealing it are often hidden. It would not be without difficulties knowing *a priori* what will be the destiny of each of the four unwise people who, covered in sweat, lie on humid ground, one getting up with rheumatisms, one with lung catarrh, one with diarrhea, the fourth in full health. The preliminary examination of the organization of each of them would undoubtedly help to solve the problem, but before this test the result would remain uncertain*22* (Lagasque 1849, p. 313).

Without mentioning crises, Juglar pointed out that when we look for the “causes déterminantes” of what surrounds us we are “under siege by a crowd of occasional causes” that “impair our view and often induce us to mistake the accident for the very origin of the affliction” (Juglar 1862, p. 1). The following passage is a rhetorical masterpiece, as it expounds the principle that will subvert the adversaries’ approach while at the same time very subtly ridiculing them:

The true criteria for causes is to see them producing, under similar circumstances, the same effects,*23* a fact unfortunately very rare in social phenomena and in everything concerning life. In this condition of uncertainty, the most contradictory causes are invoked to account for the same effects. One is surprised of the levity and facility with which the human spirit accepts everything that its surmised to it; it is so hungry for knowledge and for understanding that when nothing better is found, it is easily content with words. The very multiplicity of causes that are often invoked is sufficient, it seems to me, to prove their scarce effectiveness: for, as just one [cause] should suffice, while if a large number is cumulated, as they are never all reunited in producing the same effect, one can rigorously conclude, by eliminating them one by one, that none of them is the determining cause, not even a secondary one, for its presence is not essential for producing the expected effect (Juglar 1862, p. 2).

Juglar concluded that one should study the “preliminary state […] lacking which the presumably most powerful causes do not produce any action. This is what in medicine is called predisposition” (ibid.). Accordingly, when we pass to crises (which in Juglar’s argument only appear at this point, after the general principle of explanation was laid out), we have to identify “the conditions necessary to its existence, the constant phenomena

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*22* The distinction between remote causes (latent diseases) and proximate causes (releasing factors) was already clearly outlined by the medical school at Cos in the V-IV century A.D. With the rise of the anatomical-pathological school, to which Juglar belonged, causality was for a time understood in terms of single cause (not, however, without contradictions: Voltaggio 1999). Nevertheless, the identification of the unique cause in pathogenic agents was fairly slow, as slow was the acceptance of the implications of these discoveries in medicine (Carter 2003, pp. 12–16, and Evans 1993, Ch. 1). Pasteur’s discoveries are contemporary to Juglar’s writings: his studies on fermentation date of 1857, the year of publication of Juglar’s articles in the *Journal des Economistes* outlining his approach to crises, while the proof that bacteria do not generate spontaneously dates from 1862, the year of publication of the first edition of Juglar’s book.

*23* Juglar’s specification that the same cause produce the same effect *under similar circumstances* makes his reference to the principle of causation somewhat weaker than (for instance) Briauné’s. On the significance of the distinction between cause and circumstance see *section 2.8*. 

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that are observed beyond these extremely diversified causes invoked depending on what is expedient at the time (p. 3). Juglar could thus successfully contrast his unifying perspective to his opponents’ special views, and indeed he took every chance to do so (for instance 1862, iii, ix-xi, 1-2, 5-6, and passim; he further insisted on this in the second edition of his book, 1889, pp. 5; 27-29, 36, 43, 165, 197).

Juglar’s emphasis on the predisposing causes has two consequences. One is that in the absence of predisposition an occasional cause that could otherwise bring havoc would instead be ineffective (1862, p. 2): during prosperity, when the economy is progressing at a good pace, “a major war could not stop the progression” (1857, p. 57). The second is that the actual determining causes are not that relevant, as the crisis would have happened anyway: when everything is predisposed for the crisis, any accidental cause would precipitate it, like the last drop causing a full glass of water to overflow (1862, p. v) or like any shock setting off an explosive ready to blast (1862, p. 176; 1863, p. 8). “Scarce crops, high prices of cereals, famines are often contemporary in this country with the congestion of bank portfolios, introducing a new complication to an already bad situation; nevertheless, their presence is not necessary for producing a commercial crisis” (p. x).24 These causes are thus reinterpreted as explaining not the actual crisis, but its specific character. The interpretation of crises as individual events, each with its own particular cause, is thus turned on its head: the occasional circumstance determines only the specific features of each crisis, the difference with other similar events, while the general pattern is determined by the way in which the predisposing cause determines the unstable state of the system at certain points.

If accidental circumstances affect the actual course of crises, they can make them more or less intense but also anticipate or retard them: in Juglar’s view there is no room for strict periodicity.25 The adjective ‘periodic’ occurring in the title of Juglar’s book thus refers to a different conception, which (not surprisingly) again happens to be more akin to the medical than to the astronomical one.26 The emphasis is not much on the period,27 but on the return of the various phases, which succeed each other in precisely the same order with similar characteristics. The notion is thus related to a generic idea of ‘cycle’, that crises are not disconnected individual occurrences but part of a chain of

24 Juglar went so far as claiming that wars and revolutions are actually a consequence rather than a cause of crises: 1857, 38; 1889, p. xvi.
25 In truth he did not insist on this point in the first edition, but he specifically tackled it in the second, when discussing Jevons’s view; this is reported in section 3.
26 Beaud’s Dictionnaire de Médecine Usuelle (1849, p. 621) defines the term as follows: “Period. Refers to the different phases of an illness. A period implies a certain number of days during which the disease goes through a complete cycle”. Accordingly, Juglar attached the term ‘période’ to the denomination of the prosperous phase (‘période prospère’: 1862, p. 164) and later also to the phase of liquidation (‘période de liquidation’ (1900, p. 9). See for instance the Dictionnaire de l’Académie Française, 6th and 7th editions (1835 and 1878, respectively) for a comparison of the different intensions of the substantative.
27 Juglar, however, indicates the approximate average length of the cycle: the crisis is sudden and short, liquidation takes 1–2 years, prosperity about 6–7 years (1862, p. 202).
events implying the return of disturbances after some conditions are fulfilled, rather than to the specific kind of cycles that repeat themselves with strict regularity.

It is noteworthy that while Lagasquie observed that predisposition concerns the organism itself and the determining causes are almost exclusively external, Juglar did not take up the point, in spite of its strict connection with the causality issue.

2.6. John Mills, 1868

The principle of causation played a fundamental constructive and critical part also in a paper read in December 1867 before the Manchester Statistical Society by John Mills28 (Mills 1868). Mills cites Langton, Jevons, Coquelin, J. St. Mill, and Tooke’s and Newmarch history of prices, but neither Juglar nor Lawson. Mills begins his argument by discussing the variegated literature of pamphlets flourishing after each crisis and discussing their causes:

One feature these productions have in common: they deal with proximate causes only, or with mere antecedents as causes; each crisis appearing to be the result of its own separate accident,—usually some event lying on the surface of commercial history. The highest attempt at generalization does not ascend beyond the fact—unquestionable in itself—that over-trading, in some form or other, is the common forerunner of Panic. Overtrading, however, is not an ultimate fact, and its regular recurrence claim explanations quite as importantly as the tragic events which follow it. (Mills 1868, p. 11).

Mills explains that he intends to apply “the method by which modern science brings physical and even social phenomena within the region of causation and law”, which requires to identify the “uniformities of sequence” from which to generalize (p. 12). The first of such uniformities is that crises are so “numerous, regular, and persistent” that “whatever we may at present think of [their] cause, of [their] practical importance, or of [their] probable continuance, the periodicity of commercial crisis is at any rate a fact” (1868, p. 14). This enables Mills to exclude that the proximate causes can be at the origin of these “facts of a new order”29: panics recurred with regularity even if the institutional conditions under which trade takes place have considerably changed in the previous sixty

28 John Mills (1821–1896) was a Manchester banker and poet. According to the biographical recollection written by his widow (I. P. Mills 1899; see also Ashton 1934, p. 74), around the age of 16 Mills was transferred direct from school to the Ashton branch of the Manchester and Liverpool District Bank. In 1844 he was transferred to the Rochdale branch of his bank, but returned to Ashton in 1846. He became Bank Manager at Natwhich in 1852, moved to Bowdon as a General Manager of the Alliance Bank, and eventually joined the Directorate of the Lancashire and Yorkshire Bank in 1889. He met Jevons in 1865, “and soon sympathy of views, and of disposition also, drew them together, and their intercourse deepened the interest felt by both in economic questions” (p. 301).

“Mr. Mills’ leisure hours were at this time full of varied and active work; he devoted much time and energy to the work of the Lancashire Public School Association. As organist and choirmaster of the New Connexion Chapel, he took a pride in perfecting the musical part of the service, and much of the literary and musical criticism of the Examiner and Times was written by him ... It was not, however, until 1862 that he became a frequent contributor” (p. 201). His poems were published posthumously as Vox humana (London 1897).

29 Mills 1868, p. 13. This expression is quite interesting, as it clearly defines the cycle as a new phenomenon, to be explained in itself (“dictating the search of cause at a deeper level”: p. 13) and not as the result of a mere sequence of crises.
years and in spite of the immediate antecedents being bewilderingly varied in nature (pp. 14–15). Although some of the antecedents “in a subordinate sense […] may indeed have assigned to them the dignity of causes”, “it is evident that these incidental causes do not account for the feature we have noted as common to the whole series, that of regularity of occurrence”. Mills even noted that some events, grave in character, have occurred without culminating in a Panic, or only slightly anticipating it with respect to the customary decennial rhythm, “showing how little the action of the normal causes of Panic could be accelerated by so vast an addition of external force” (p. 15). This argument echoes Juglar’s claim that even a war would not disrupt the course of a prosperity if no abuses of credit had previously predisposed the crisis, but goes one step further, by qualifying the proximate cause in question as an ‘external event’ or ‘incidental disturbances’ (p. 18), thus coming close to introducing the distinction between exogenous and endogenous causes that was instead missed by Juglar.

Mills’s argument is slightly different in intension from Juglar’s. While the latter was trying to identify the vera causa common to each crisis, Mills aimed at singling out the cause of the cycle as a whole. But the distinction between proximate and primary cause plays the same role in their criticisms to individual explanations of crises by appeal to general epistemic principles. Both authors linked this argument to the idea that if certain conditions are not fulfilled even grave events, that would otherwise determine a crisis, would be ineffective; and conversely, that at the right time a small determining cause could trigger a panic (e.g., p. 38).

2.7. William Stanley Jevons, 1875–79

While by the 1870s the notion of a more or less regular return of crises was becoming fairly widespread (although with important exceptions), Jevons saw in this

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30 This aspect and its importance, with reference to Mills and to Jevons, was noted by Peart (1996, pp. 46–49).

31 Both Mills and Juglar thought these common cause to consist in exaggerations and abuses of credit. In Mills’s words, it consists in “exaggeration of healthy functional action”, “diseased overgrowth of credit”, intervening gradually but eventually inducing the ‘degeneration’ of the stable ‘healthy confidence’ of the prosperity “into the disease of too facile a faith” in the highly speculative and unstable time preceding the panic — Mills 1868, pp. 27 and 36. The keywords, recurring in a long string, characterizing Juglar’s view are ‘imprudence’, ‘abuses’, ‘excesses’: as “it is typical of human nature never to remain within the appropriate limits” (1862, p. 20) and become overexcited (167), the result is “excess of speculation” (16, 20, 24, 88), “extravagant application of floating capital” (25), “diverted” (6, 164, 199), insane” (25) or “injudicious” (142, 208) speculation “beyond their means” (142), “exaggerated development of discounts” (27, 31, 209), “abuse of credit” (29, 34, 38, 88), “overtrading” (29), “fictitious” (34), “doubtful” (172) or “artificial” (57, 163) credit, “excessive price” (37), “inconsiderate development of industry” (164).

32 William Stanley Jevons (1835–1882) was educated at the Mechanics Institute High School in Liverpool, at University College School, London, at University College London, where he took chemistry and mathematics. In 1854 he worked as an assayer at the Mint in Sydney, and in his spare time studies meteorology and botany. In 1850 he returned to London to complete his degrees (BA in 1860 and MA in 1862). He moved to Manchester to take a tutorship at Owens College, and meanwhile produced his first seminal studies in the mathematical theory in economics and in Logic (Pure Logic, 1863; Primer of Logic, 1876; Principles of Science, 1874). He became Cobden Professor of Logic, Mental and Moral Philosophy at Owens College in 1866. In 1875 he was offered the chair of Political Economy at
regularity much more than most of his contemporaries. The experience of the crises occurred in 1815, 1825, 1836–39, 1847, 1857, 1866, 1878 (Jevons 1878b, p. 231) seemed to suggest a fairly precise decennial period. Jevons was convinced of the strict periodicity of the phenomenon, and to him the problem of the recurrence of crises not only called for a common cause, but presented the additional issue of explaining the causes of the regularity in the period.

The first part of the problem was dealt with along a path very similar to those of the authors that preceded him, that is, by tackling at once the epistemic and the rhetorical sides of the issue, that is, by arguing that the identification of a “deep” cause is the appropriate scientific procedure while reference to accidental causes produces a bad explanation. He maintained that “No accidental cause [...] is sufficient to explain so widespread and recurrent a state of trade” (1878a, p. 206), and ridiculed the variety of the explanations offered by commercial writers concerning the cause of the present state of trade. Foreign competition, beer-drinking, overproduction, trade-unionism, war, peace, want of gold, superabundance of silver, Lord Beaconsfield, Sir Stafford Northcote, their extravagant expenditure, the Government policy, the Glasgow Bank directors, Mr. Edison and the electric light, are a few of the happy and consistent suggestions continually made to explain the present disastrous collapse of industry and credit. (Jevons 1878b, in 1884, p. 221).

Nevertheless, he admitted that each individual crisis took place under “infinitely diversified” “incidental circumstances” (1878b, p. 221). This explains why various reasons have been advocated for the occurrence of crises; “but, so long as these causes are various and disconnected, nothing emerges to explain the remarkable appearance of regularity and periodicity which characterizes these events” (p. 222). There must therefore be some “deep cause” in action, common to all these events:

Taken altogether, the historical facts concerning the periodic recurrence of crises appear to me too strong to admit of doubt, and it is only the nature of the explanation of that recurrence which is a matter of speculation (Jevons 1878a, in 1884, p. 219).

Jevons examined a number of the suggested explanations, and eventually accepted Mills’s psychological explanation of the cycle. Jevons stressed, however, that although Mills recognized the regularity of fluctuations he failed to explain their period. Jevons’s
well-known theory based on the recurrence of sunspots\textsuperscript{36} was precisely an attempt to solve this problem.\textsuperscript{37} At first Jevons tried to formulate a mechanical theory of fluctuations. He stated the

well-known principle of mechanics that the effects of a periodically varying cause are themselves periodic, and usually go through their phases in periods of time equal to those of their cause (Jevons [1875], in 1884, p. 194),\textsuperscript{38}

and explained oscillations by analogy with the physics of resonance:

It may be that the commercial classes of the English nation, as at present constituted, form a body, suited by mental and other conditions, to go through a complete oscillation in a period nearly corresponding to that of the sun-spots. In such conditions a comparatively slight variation of the prices of food, repeated in a similar manner, at corresponding points of the oscillation, would suffice to produce violent effects. A ship rolls badly at sea, when its period of vibration corresponds nearly with that of the waves which strike it, so that similar impulses are received at similar positions. A glass is sometimes broken by a musical sound of the same tone as that which the glass produced when struck. […] If, then, the English money market is naturally fitted to swing and roll in periods of ten or eleven years, comparatively slight variations in the goodness of harvest repeated at like intervals would suffice to produce those alternations of depressions, activity, excitement, and collapse which undoubtedly recur in well-marked succession. (Jevons [1875], in 1884, p. 204)

Sunspots, whose period approximately match that of crises, would thus cause wide fluctuations by triggering vibrations and amplifying them by hitting rhythmically in synchrony with the economic system’s intrinsic period. But Jevons realized that such an

\textsuperscript{36} Although Jevons’s theory was widely ridiculed, it was not without foundations in the contemporary literature on agricultural cycles. A list of titles would suffice to prove this point: “Relation of sun spots to the wine crop” (Harper’s New Monthly Magazine 45, June–November 1872), “Relation of the barometer to the aurora and sun-spots” (Harper’s New Monthly Magazine 46, December 1872-May 1873), “Sun-spots and rainfall” (Atlantic Monthly 31, 1873), “The effect of sun spots on climate” (Academy vol. 16, July–December 1876), “Periodicity of sun-spots and rainfall in Southern India” (Academy vol. 11, January–June 1877), “Sun-spots and famines” and “Relation between sun spots and wind” (Academy vol. 12, July–December 1877), “Sun-spots and famines” (Nineteenth Century 2, August–December 1877), “Sunspots and rainfall” (Academy vol. 13, January–June 1878, vol. 15, January–June 1879, and vol. 16, July–December 1879). More are cited in Morgan 1990, p. 23, warning that this vast literature on sunspot cycles and periodical phenomena included some satirical pieces; Jevons suspected that the anonymous article on “University boat races and sunspot cycles” was addressed to him. Observations on sunspot and agricultural cycles had a fairly long tradition: Jevons went back to Herschel (1801) and Carrington (1863), noting however that their results were not robust enough (Jevons [1875], in 1884, p. 195; 1878a, in 1884, pp. 206-7). Jevons’s interest in agricultural cycles may have been influenced by the experience accumulated while gathering data on meteorological cycles in Australia (Black 1981, p. 20), and by the work of his colleague Arthur Schuster at Owens College, who had noticed that the quality of wine crops fluctuated with periods more or less similar to those of sunspots (cited in Jevons [1875], in 1884, p. 195; see Keynes 1936, p. 124).

\textsuperscript{37} Jevons himself recognized that, in his collection and interpretation of data concerning the cycle phenomenon, he was guided by a theoretical bias in favor of a strict periodicity (Jevons 1878b, in 1884, p. 228). Keynes remarked that Jevons had “passed over with surprising levity” the discrepancies with strict periodicity he had himself pointed out, and that “the details of the inductive argument are decidedly flimsy” (Keynes 1936, p. 126).

\textsuperscript{38} This mechanical principle was also advocated by Danson (1848, p. 101): “The commercial distress which has so strongly marked the year just closed would appear to be, in the main, only a recurrence of a state of things which has become, in some degree, periodic. Effects occurring repeatedly, at intervals having some appearance of regularity, seem to indicate a corresponding regularity in the recurrence of their causes” (Jevons was aware of this contribution).
explanation was assuming precisely what he had to demonstrate, that is, the existence of an internal rhythm,\textsuperscript{39} and thus switched to a different approach.

When we know that there is a cause, the variation of the solar activity, which is just of the nature to affect the produce of agriculture, and which does vary in the same period, it becomes almost certain that the two series of phenomena, credit cycles and solar variations, are connected as effect and cause (Jevons 1878a, in 1884, p. 216).

The new explanation—the ‘missing link’ was found in 1879—is directly causal: sunspots are linked to fluctuations in crops in India or China, thereby affecting the price of food in those regions. When rice is cheap, peasants can afford to buy new clothes, which explains the increase of imports of fabrics from Britain. Wherever the impulse comes from, it is “like the match which fires the inflammable spirits of the speculative classes”. Again the amplitude of fluctuations, out of proportion with their actual causes, is illustrated by analogy with an explosion:

The history of many bubbles shows that there is no proportion between the stimulating cause and the height of the folly to which the inflation of credit and prices may be carried. A mania is, in short, a kind of explosion of commercial folly followed by the natural collapse. (1879, in 1884, p. 243).

2.8 Individual instances vs. general laws.

The difference in the view of causation between the authors examined in this section\textsuperscript{40} and the mainstream attitude towards crises has deep implications on the kind of explanation offered for the phenomenon—and indeed, as Mills pointed out, for the definition of the fact itself. The dominant approach during most of the XIX century consisted in treating each crisis as an isolated exception, due to specific causes, to a

\begin{footnotesize}
\textsuperscript{39} He admitted he was presupposing “the rather fanciful hypothesis that the commercial world might be a body so mentally constituted […] as to be capable of vibrating in a period of ten years” (Jevons 1878b, in 1884, p. 226).
\textsuperscript{40} The approach outlined here is not, of course, exclusive to these authors. These have been selected for the explicitness of their statements and the clarity with which they drew to their conclusion. It is perhaps also worth reporting observations by three other writers relevant to the issues discussed here. Thomas Joplin, in a pamphlet on The cause and cure of our commercial embarrassments also identified a single “originating cause” (1841, p. 23) — the exportation of precious metals — to the series of embarrassments, and stressed that the repercussion of this cause are often out of proportion with the effect it generates (pp. 14 and 20).

James Wilson, whose primitive cobweb-like model of agricultural prices is more akin to cycle theories than to the early theories of crises, noted that between peaks and troughs of the supply and price of wheat between 1817 and 1838 “the operation is gradual and regular to a wonderful degree”. He commented that changes so uniform must have been brought about by uniform causes, and not by e.g. fluctuations in weather or accidental reasons: otherwise we would have to “believe that from 1817 to 22 the seasons were every year rapidly and uniformly improving, and that from that year till 1929 they were so rapidly and uniformly becoming worse, and so on during the whole period. As it is therefore plain that these fluctuations of supply cannot arise from the accidental variations of the seasons (though upon some occasions the natural operation may be aggravated by this cause), it follows that they must arise from an increased or diminished cultivation” (Wilson 1839, 1840 edition, pp. 14–15).

John Wade, who produced one of the earliest (if not the earliest) complete (albeit primitive) general business cycle model, after identifying “the general principle which govern the commercial cycle” listed a number of “minor causes of fluctuations in manufacturing employments”, aggravating or relieving the effects of the main mechanism (1833, pp. 255–7; see Besomi (submitted)).
\end{footnotesize}
‘normal’ course of events consisting in a fairly smooth progress. The main feature of this approach is that each crisis is studied in isolation from the others. Most of the literature of the time was occasioned by a crisis, and the titles of articles and pamphlets mostly relate to ‘the present distress’ or some such reference to the specific event under discussion. The emphasis is on its specific features, an account of which requires an accurate and complete listing of all the circumstances bringing it about and characterizing its course. In this approach, a distinction of causes and concomitant circumstances is not appropriate, for all factors contribute to the outcome and are therefore essential. Accordingly, the lists of circumstances to which crises were attributed tended to be rather long.

The opposite view implies a completely different approach. The identification of a common cause requires in the first place that crises be treated not as singular and unique events, but as members of a class of similar events. Secondly, the recognition of the common features to all instances in the class (such as their morphology, the concomitance of events, or general patterns), via a process of abstraction, prevails upon the stress on differences. The relationships so identified apply not only to one instance, but are universal in their application within all economic systems sharing the same structure. This kind of explanation has a nomic character, while the competing viewpoint consisted in the understanding of individual occurrences in terms (if at all) of the violation of a law. Lawson’s and Juglar’s observation that crises are a typical feature of advanced commercial countries while absent in more primitive ones is a qualification of the domain of application of the law they identified. And the emphasis of all these writers (except Briaune and Cory) on the mechanisms generating instability points at the necessary character of these laws: an unstable system is bound to explode, whatever the origin of the

41 As Marx noted, “A period of crisis in England is also one of theoretical research” (letter to Lassalle, 23 January 1855, in Marx-Engles 1983, p. 511). Similarly Mills: “It is scarcely a matter for surprise, and still less for regret, that every commercial crisis occurring in this country is promptly followed by a literature of pamphlets, discussing the phenomena and their supposed causes, while they are yet a matter of painful interest to the public mind” (Mills 1868, p. 11).
42 See for instance the passages cited in footnote 4 (Coquelin and Société d’économie politique), or the mock list prepared by Briaune, cited in section 2.1.
43 The opposition between the multiple causation approach, with its emphasis on uniqueness of outcomes, and the common causation approach is to be found in Mill’s distinction between the historical method and the deductive method in economics: see Maas and Morgan 2002 and for a thorough discussion Pearl 1995.
44 The relationships of laws and causality is another treacherous and controversial subject, to be approached with care. For this reason, the argument is expounded here in very general terms (some of the points discussed here were suggested by the reading of Amsterdamski 1977, pp. 839–44). The connection of causation and law was explicitly evoked by Mills (cited in section 2.6). Starting from a different, but related, kind of argument, Philippe Le Gall came to a similar conclusion regarding Briaune: he stressed that Briaune’s use of statistics (albeit primitive) enabled him to express in terms of averages the constant causes on which the laws determining agricultural prices are based, in turn reflecting his belief in a ‘natural order’ of the world (Le Gall 2006, with reference in particular to Briaune 1857).
45 Thomas Joplin must be added to this list: his observation that “Pressures and panics […] appear to be confined to countries possessing a paper circulation” (1841, p. 10) is obviously related to the transmission mechanism of the ‘originating cause’ he identified (see footnote 39).
spark igniting the gunpowder, while if the true cause is not operating even strong shocks fail to seriously disturb the system.

This approach opened at least four entirely new perspectives to the theory of crises and cycles. The first is that a general, universal and necessary law enables one to attempt forecasting the occurrence of the next event. This eventually led, even before mathematical models of the cycle were formulated, to found business barometers institutes. But at least one of our writers, Juglar, used the constant concomitances he identified to predict the oscillation of business, and was indeed quite successful (De Foville 1905, p. 296), and Briaune insisted that his laws permitted not only forecasts but also the planning of remedies (Le Gall 2006, Simonin 2006).

Secondly, the process of abstraction and identification of common features makes sense of the distinction between cause and circumstance, or between true and proximate cause. Thereby it also contributes towards laying the foundations of the distinction between endogenous and exogenous theories. This obviously would have no room in a conception where all circumstances are essential in the understanding of the phenomenon. Although for an explicit formulation of this distinction another few decades had to go by (Mentor Bouniatian is credited with the introduction of the term in 190846), Lawson, Coquelin and Mills came very near to it, and Juglar could (but failed to) pick it up from the medical tradition where he was brought up.

Thirdly, if the true cause acts with the force of a universal and necessary law, the corresponding effect may be interpreted as the theoretical norm, rather than an exception to the normal course of events. This passage also requested more theoretical ruminations, and the first full-fledged formulation of the idea of the cycle as the theoretical norm can probably be attributed to Robertson in 1915 (Besomi forthcoming 1). Nevertheless, while most of the writers discussed in this section still thought of equilibrium as the normal state of affairs47 John Mills went some way towards considering the “normal cycles of development of Credit”, with its “normal stages” being the result of the “normal tendency of the human mind” (1868, p. 17).

Finally, the distinction of true and proximate causes permits the reinterpretation not only of the common traits to all events, but also of the specificities of each crisis. While the similarities are attributed to the common cause, the differences are explained in terms of the specific contingencies under which individual crises take place. This issue

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46 See e.g. Vogel 1917, p. 16, Zimmermann 1927, pp. 30–1, and Hayek 1933, p. 143. Robertson, however, found analogous concepts in Lescure’s distinction between organic and inorganic theories of depression, and in Philippovich’s distinction between crises caused by external events and following a period of upswing (Robertson 1915, p. 8n, with reference to Lescure 1907 and Philippovich 1897). See also footnote 18 on Boccardo.

47 On Juglar, the view commonly held at his time, and a comparison with Mills, see Besomi (forthcoming 2).
was taken up by Juglar and Jevons with respect to the regularity of the occurrence of crises, and dominated the debate in the last decade of the XIX century.

3. Regularity and causality

Jevons’s supposed strict regularity of the cycle posed with urgency the problem of the part played by “exceptional and accidental events, such as wars, great commercial failures, unfounded panics” (Jevons [1875], in 1884, p. 203). Jevons used them to explain the anomalies in his series, or the breaking up a major event into two smaller ones (1878a, in 1884, pp. 207–8). Similarly to Juglar, Cory and Mills, Jevons is turning the interpretation of these exceptional events on its head. While Cory, Mills and Jevons referred to such events to explain the historic peculiarities of each crisis, Jevons focused on their influence on a specific aspect, namely, the irregularities in the period. When commerce is disturbed by wars, tariffs or similar extraneous events, “it can be no matter of wonder that the regular march of the decennial variation was somewhat broken.” (Jevons 1878a, in 1884, p. 208). However, as Proctor noticed in his highly critical discussion of Jevons’s theory, such events can indeed explain some deviation from the supposedly regular course of events, but Jevons did not indicate his opinion as to the precise extent of the admissible deviation. His treatment was thus far from satisfactory:

> if recognizable crises fail to occur when the decennial period requires them, yet we may assume that, at the proper time, some trade disturbances have taken place, only on so small a scale as to escape notice; but if trade disturbances occur which even attract notice, at times not reconcilable with the decennial theory, then we may overlook them, because a true decennial crisis is intense, profound, and widely extended. It is a case of ‘head I win, tails you lose’ with the supporters of the decennial theory. (Proctor 1880, p. 174).

Interestingly, the strictness of periodicity and the role of exceptional events formed the core of the explicit reciprocal dissent of Juglar’s and Jevons’s views. Although Jevons had acquired Juglar’s book (but not read it in its entirety “with the care which it deserves”\(^{48}\)), he did not mention him among his forerunners in the inquiries into the periodical return of crises (1878b), where ‘periodical’ was intended by Jevons in its astronomical sense while Juglar had in mind a medical notion of the attribute.\(^{49}\) Juglar, in turn, contested Jevons’s excessive faith in strict periodicity: “crises do not come at pre-established dates” (1889, p. 163). He also implicitly rejected the methodological premise of the periodicity of causes: “this, however, does not mean that there are regular cycles of abundance and scarcity; Joseph’s prediction of seven years of prosperity and [seven years] of misery proves that this was an exceptional fact”\(^{50}\) (p.162). Juglar took the

\(^{48}\) Jevons to De Foville, 1 February 1879, in Jevons 1977, Vol. 5, letter 578.

\(^{49}\) Juglar’s book was previously referred to Jevons by R. Adamson, who considered it very perfunctory and vague about the periodicity of crises — also meaning periodicity in the strict chronological sense (Jevons 1977, Vol. 4, pp. 300–1).

\(^{50}\) Noteworthy, the biblical image has been previously evoked to reject not only the strict periodicity of crises, but their recurrence tout court: An anonymous Political Economist (Cliffe Leslie?), in a letter to the Economist dated 15 November 1864, claimed that if the alteration of seven years of abundance and
occasion to stress again that the outbreak of a crisis is only possible when equilibrium has become unstable: before that, any famine or war would not excessively derange the economic system, while if equilibrium is unstable any events can trigger the explosion (p. 165). Juglar’s medical notion of causality (see section 2.1) is thus opposed to Jevons’s mechanical one. And, as Jevons did not find any internal rhythmical cause of fluctuations, the contrast turns out to be between a self-generated (in intention, at least) and an exogenous mechanism.

In the two last decades of the Century many commentators discussed of the regularity vs. irregularity of cycles, but mainly as a matter of realism rather than as theoretical and methodological issues. A notable exception was E. D. Jones, who in 1900 suggested that explanations of the cycle could be divided in two categories: those ascribing the movement to a continuous cause, and those relying on intermittent pulses. The main representative of the latter group was of course Jevons; more interesting the analogy evoked in connection to the former (where Juglar belonged):

To grant that a phenomenon is of periodic occurrence does not necessarily imply that the force which causes it is spasmodic or lacking in continuity. A regularly operating force, when at a certain point its cumulated effects disturb the equilibrium under which the force has up to that time operated, may manifest itself only periodically in certain of its aspects. The simplest illustration of this are the intermittent spring and the geyser (Jones 1900, pp. 131–2).

Representatives of this category are the theories based on the part played by credit: a credit structure requires some time to be built; its use eventually leads to its abuse, the whole system collapses and has to be rebuilt again (p. 138).

4. Albert Aftalion, 1913, and Wesley Mitchell, 1913: two obituaries of crises theories

At the eve of World War I, a number of theories of the cycle —as opposed to the older theories of crises— had been formulated, in particular by Hawtrey, Tugan-Baranowsky, Spiethoff, Schumpeter, Bouniatian, Pohle, Lescure, Aftalion, Mitchell. The issue was no longer whether crises are part of a cyclical movement, but how this entire cycle can be explained. Accordingly, the need to convince fellow economists that crises have a common cause (or set of causes) gradually gave place to discussions as to the nature of such cause(s): the debate quickly moved its focus from the causes of crises to the nature of the whole cycle.

Some of these authors recorded this change in perspective and drew a close to the debate. In France, Aftalion liquidated the old approach as misplaced emphasis, and (following Lescure, who a few year earlier had defined the crisis as “the point of seven years of famine was not an extraordinary circumstance, Joseph’s prediction would have been unnecessary (p. 1428). Interestingly, Briona learned the biblical image to argue, in the name of the universality of the laws of nature, that the period of the agricultural cycle must be 14 years: “If such a periodicity existed in Egypt, it exists everywhere; for the very nature of the law is to be general, regardless of the initial conditions regarding the climate” (1857, p. 122).
intersection between a period of advance lasting three to five years and a period of depression of a similar length”: 1907, 1932 ed. pp. 2–3) prepared the ground for the complete dismissal not only of the theories of crises, but also of the very notion of crisis:

The earlier inquirer into the phenomenon, impressed by the devastation following crises, focused only on crisis itself, on the violent break of equilibrium that is observed for a brief time only. They ignored what precedes it and what follows it. Today we know, especially thanks to Juglar, that crisis is but one of the moments—in truth, the most distressing one—of an entire cycle taking place periodically. […] Crisis is the point […] of intersection between prosperity and depression, the culmination of one phase and the beginning of the other. […] What happens during the crisis cannot be understood or explained without examining the whole of the cycle: the prosperity preparing the crisis, and the depression which ensues from it and which prepares the return of good times. When the subject will be better known, writers will use less the expression overproduction crises and will use instead economic cycles. In scientific writings, the latter expression will tend to substitute the former. (Aftalion 1913, vol. I, p. vi).

Wesley Mitchell, in a passage of a rhetoric power matching Juglar’s epistemic statement published half a century earlier, takes up all the threads examined so far and places them in the new context:

Wide divergences of opinion continue to exist among competent writers upon crises; but in recent years substantial agreement has been reached upon two points of fundamental importance.

Crisis 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 briefest of the three phases of a business cycle—prosperity, crisis, and depression. Modern discussion endeavor to show why a crisis is followed by a 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.

The wider grasp of the problem has discredited the view that crises are due to abnormal conditions which tempt industry and trade to forsake their beaten paths and temporarily befog the judgment of business men and investors, or to misguided legislation, unsound business practices, imperfect banking organization, and the like. As business cycles have continued to run their round decade after decade in all nations of highly developed business organization, the idea that each crisis may be accounted for by some special cause has become less tenable. On the contrary, the explanations in favor today ascribe the recurrence of crises after periods of prosperity to some inherent characteristic of economic organization or activity. The complex processes which make up business life are analyzed to discover why they inevitably work out a change from good times to bad and from bad times to good. The influence of special conditions is admitted, of course, but rather as a factor which complicates the process than as the leading cause of crises (Mitchell 1913, pp. 5–6).

Mitchell and Aftalion presented the transition as the story of the inevitable progress from partial to general, from obsolete to modern, from ‘popular’ to scientific. Their rhetoric is remarkably continuous with the pioneers; but although there is some truth in these accounts, the story was a bit more complicated.
5. Epilogue: from a causal theory of crises to the euthanasia of causality

The notion of causation played an instrumental part in the transition from the approaches to ‘commercial distress’ focusing on crises to the approaches taking into account the whole cycle. The recognition (fairly well discussed in the literature) of the periodical character of crises and the description of their phases were important steps, but the formulation of a theory of cycles required a number of additional passages, including a reinterpretation of the causal nexuses.

Crises were at first interpreted as disconnected events not much because there was no evidence to the contrary, but especially because the reference theoretical system excluded crises from its premises, unless they were generated (in Say’s words, which were widely shared) by “wars, embargoes, oppressive duties, the dangers and difficulties of transportation”, social unrest, increasing uncertainty, arbitrary exactions, jobbing and speculation as causes of obstruction to circulation. In such a conception of crises as “political diseases” characterized by disproportions (Say 1803, cited from the 1880 translation of the 4th edition, Book 1, Chs. 15 and 16), an inquiry into their causes could only take the form of the identification of the specific cause to each individual event. Crises were indeed characterized in terms of their ‘symptoms’, and divided into ‘panics’, ‘financial crises’, ‘monetary crises’, ‘commercial crises’, states of ‘distress’, to which a specific cause could easily be associated. The limited number of dissidents from this view among economists were trapped by the weigh gained by Say’s doctrine, and to prove their case they had to explain in the first place why Say’s law was not valid, or how it could be momentarily ineffective. The heretic theorists’ views (Marx excepted) did not progress much further than a theory of the possibility of crises.

A few decades later, the fairly regular return of crises introduced a new element to be pondered. It is important to stress that this facts alone could not be decisive: as the constellation of circumstances under which crises were taking place was rich and varied, there was no logical necessity why explanations invoking different causes should not be formulated, also because they were still consistent with the dominant theoretical tradition. The opposite assumption, that is, that these events share some features (which

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51 It is interesting to notice the absence, in this and in the corresponding lists of possible causes of crises, of technological change. This factor was only included towards the end of the century.
52 This characterization is generic and tentative only: the history of the concepts of crises advanced by economists and laypeople still needs to be explored in all its complexity. This would be relevant not only as a complement to the story told in these pages, but also for the very understanding of the history of crises and cycles theories. Yet almost all historians of these theories have focuses on the classification of the causes of crises (see, for a discussion, Besomi [forthcoming 1]); see however Pinkus 1906, Ch. 4, for a discussion of the concept of crisis as ‘disturbance’ in the context of the relationship of crises and ‘normality’.
53 Laveleye, for instance, rejected as follows the view that crises return at regular intervals for intrinsic causes: “Crises return frequently because the causes producing them conjoin more and more frequently […] But […] each crisis has its own peculiar determinant, and does not necessarily result from the periodical
a process of abstraction had to identify) and that to explain this constant set of characteristics a unique cause (or set of causes), necessary and universal, should be sought, was born outside economics. Of the writers considered here, three were not economists (Briaune, Cory and Mills); Juglar borrowed his methodology and general perspective from medicine; Lawson’s argument had its roots in a generic reflection on science; Coquelin was a free trader and believer in free banking, anxious to blame crises on privileged banks; and Jevons relegated his cycles theory to ‘practical’ economics, while believing that in theory overproduction is “evidently absurd and self-contradictory” (Jevons 1871, ed. 1911, pp. 202–3). In the case of both Coquelin and Jevons, the factors evoked were external to the operation of the economic system, thus not incompatible with Say’s law. Parallel to the shift in the mode of explanation of crises, also their reinterpretation as a ‘fact of a new order’ took place outside economic theory.

The causal principle, in some form such as ‘similar effects must be produced by similar causes’, was sometimes interpreted in a naive way, as indicating the existence of a unique and always the same cause of all crises, or more loosely as considering a complex of circumstances and causes, remote ones interacting with proximate ones. The outcome, however, was similar. Eventually the ‘true causes’ of the common traits of all crises were singled out, and the secondary causes were downgraded from determinants of the crisis to explanations of their peculiar historical distinctiveness, in differentiated ways reflecting the more or less mechanical interpretation of the causal principle. This transition opened a number of related issues, which were not much discussed in full in the early stage of the debate but became the core of the theoretical argument when professional economists eventually took up the issue in its new form towards the end of the XIX century—such as the distinction of endogenous and exogenous determinants and the questioning of the stability of equilibrium.

The movement from crises to cycle theories cannot, therefore, be reduced to the identification of a fact, for the cycle could not be a ‘fact’ until a conceptual and theoretical apparatus enabled people to perceive it as such. This transition thus implied a much wider range of considerations. The most obvious ones regard the ontological problem of the identification of the ‘vera causa’ of crises: as was the case with the identification of the causes of each specific crises, very soon a plethora of explanations were supplied, some complementary but some antagonistic to the others. This aspect thus proved rather

return of certain circumstances” (1865, p. 290). Interestingly, Laveleye criticism to other theories also relied on misplaced weigh in causal nexuses, for he charged them with mistaking accessory for primary causes (p. 110).

54 It is interesting in this respect to compare these developments with the evolution of the notion of causation in medicine as outlined in Voltaggio 1999.

55 The precise role of the ‘subsidiary causes’ (in some sense) in different theories of cycles and crises would deserve a specific study. The approaches outlined here are already quite diversified, the topic remained central in the discussion of the great theorists of the early XX century, and much more was to come with the treatments of these circumstances as ‘shocks’.
troublesome, and eventually gave rise to attempts to synthesize the existing explanations.\footnote{Most early theories of crises or cycles relied on a very small number of causes — naturally so, perhaps, in the early stages of inquiry. A relevant exception was Robertson, who opened his Study of Industrial Fluctuations citing “the deathless word of the Dodo, everybody has won and all must have prizes, in the sense that almost all the writers who have made any serious contribution to the study of the matter appear to have had a considerable measure of right on their side” (1915, p. 1). Mitchell also claimed that “We can take all of the theories into our working conception of business cycles in the sense that we can conceive of the recurrent sequences of prosperity, recession, depression and revival as involving cyclical fluctuations in each of the economic processes listed, and as affected by emotional and climatic conditions” (1927, p. 461). The syncretistic approach par excellence, however, was Haberler’s Prosperity and Depression (1937), whose task was that of examining whether the existing explanations of the cycle were compatible or antithetic to each other, and of attempting a synthesis.} But, as Mitchell pointed out, agreement was reached on other fronts. The principle of causation was taken as an epistemic principle: the explanation of the phenomenon must pass through the identification of a common cause to all crises. And this was also used as a rhetorical device: a good explanation must conform to the principle of causation, the contraversers being charged with unscientific attitude or even ridiculed.

Ironically, while the agreement on this epistemic principle was essential in turning the observation of the periodical return of crises into a theory of the phenomenon, the result of the completion of the transition was the gradual disappearance of any emphasis on the causes of crises. One reason was that the notion of ‘crisis’ lost its original sense after Lescure, Aftalion and Mitchell redefined it as the point of transition between prosperity and depression. One of the common features of crises, recognized by all commentators up to World War I, was their suddenness and violence. For a while, emphasis was still on crises: the explanations were asymmetrical, most theories rather than being theories of cycles were theories of recurring crises; this is also witnessed by the odd number of phases into which the cycle was divided,\footnote{In 1913 Mitchell still accepted Juglar’s division in three phases, as witnessed by the passage cited above. He later changed his mind: “if the transition from prosperity to depression is recognized as a separate phase, it seems logical to give similar recognition to the transition from depression to prosperity” (Mitchell 1927, p. 378).} and by what Schumpeter called ‘terminological lag’ (Schumpeter 1954, p. 1123)— which at first was not a lag, but a choice of terms emphasizing the main fact to be explained. At a certain point it was felt, however, that the trough also needed to be explained rather than simply assumed — as it often was\footnote{On Juglar, with a reference to some of his contemporaries, see Besomi [forthcoming 2].} — as a spontaneous movement towards the ‘natural’ state of the system. The phase of ‘recovery’ was introduced in the original scheme, and it was claimed that its explanation should be symmetrical to the beginning of the downturn.\footnote{In Aftalion’s view, “logics requires that prosperity, one of the phases of the cycle, is explained is the same way as crisis and depression, which constitute the other phase” (1913, vol. I, p. 282).} Although, strictly speaking, this would not necessarily have implied anything but inverting the direction of the operation of the causal nexuses, after little time the description of the cyclical behavior also became symmetrical: the suddenness and violence of the crisis gave place to a gentle downturn. The process was completed with the birth of the mathematical theories of the
cycle, based on functional equations whose solution is a sine curve combined with an exponential term (Tinbergen, Kalecki, Samuelson). In this formulation, the term ‘crisis’ did not make any sense, and the stage was set for its disappearance.\(^6\)

There is, however, a more fundamental reason for the vanishing of the notion of cause in connection with crises. If crises are nothing more than a phase of the cycle, their explanation cannot be disconnected from the explanation of the whole cycle. If crises are the inevitable outcome of prosperity and the premise to depression, the latter in turn giving place to another prosperity, it makes no sense to inquire into the ‘why’ of crises (or any other phase, for that matters), precisely as it does not make sense to inquire on why spring follows winter or why an oscillating pendulum passes through a certain point. One could, of course, ask such questions. But they are special cases of a more general question, that of the movement of the system as a whole, the answer to which includes the answer to the special question as a particular case. The sensible question should regard instead the properties of the system as a whole that make it suitable to undergo fluctuations, in particular the instability of equilibrium.\(^6\)

When the movement as a whole becomes the object of inquiry, the pertinent question changes from ‘why a specific phase’ to ‘how the entire cycle’ takes place. This is precisely what happened in mechanics: while Newtonian (vectorial) dynamics were expressed in terms of forces directly causing the acceleration of a free body, in the Lagrangian (scalar) formulation, suitable for systems bodies, the effect of a force became a function of the system as a whole, and causality passed from direct to structural (see e.g. Prigogine and Stengers 1977a, pp. 526–529).\(^6\)

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\(^6\) In spite of this attempt to kill it, the notion of ‘crisis’ keeps resurrecting in various forms. Financial downturns stubbornly refuse to behave smoothly and symmetrically to the upturns, and the term ‘financial crisis’ is still in use. Economic crises are also revived in the form of the asymmetry of the cycle, and nonlinear dynamics can account for the phenomenon. Moreover, some writers continued referring to crises as a proper phenomenon rather than simply as a transition from boom to depression—in particular those belonging to Marxist traditions, and also Keynes (De Vecchi 1983).

\(^6\) One of the issues characterizing the entire history of crisis and cycles theories is that of the relationship between cycles and equilibrium. Broadly speaking, one current of thought maintains that cycles should be explained within a conceptual system in which equilibrium is the theoretical norm. The opposite approach maintains instead that if equilibrium is the norm, the cycles does not admit an explanation fully contained within the theoretical system (the best discussion of this issue is Löwe 1926). The emphasis on the instability of equilibrium is one of the forms in which the problem was cast by representatives of the second current of thought (for a more detailed discussion see Besomi (forthcoming 1)).

\(^6\) The transition from Newtonian dynamics, based on trajectories, and Lagrangian dynamics, based on the conservation of energy, is based on an apparently innocuous rewriting of Newton’s law (as formulated by Euler), from \(F = \frac{mdv}{dt} = \frac{md^2x}{dt^2} = 0\) in the former formulation, a force \(F\) applied to a body of mass \(m\) directly causes an acceleration \(\frac{dx^2}{dt^2}\). In the second formulation, the cause and the effect, in the form of a fictitious ‘inertial force’ \(- \frac{md^2x}{dt^2}\), balance each other: the Lagrangian formulation, taking up the Galilean tradition, is based on the continuous equivalence between cause and effect, while in the Newtonian formulation it is not apparent how the cause of the acceleration is affected by the acceleration it has produced. In the Lagrangian system, what is lost from one part of the system is gained elsewhere (for instance, the potential energy lost in the descending movement of the pendulum is transformed in kinetic energy, the same energy that will turn again in potential energy during the upward movement). (Prigogine and Stengers, 1977 and 1977a, Stengers 1989, pp. 244–47).
Not surprisingly, in economics the transition was again finally accomplished by the mathematical (‘econometric’) business cycle theories, the object of which was to describe “how one situation grows out of the foregoing” (Frisch 1933, p. 171, emphasis added). This opened to two interpretations of causation, both of which radically different than the tradition from which we started. Samuelson embraced the deterministic one.63 He pointed out that in such a closed dynamic system, where motion results from the functional equations linking together a number of variables and their derivatives at different points of time which, given a set of initial conditions, determines its entire development, it does not make sense to inquire which variable causes the others to move, as they are all interdependent.

The notion of causation in a closed interdependent system is exceedingly slippery and ambiguous. As used here, a system is said to be causal if from any initial configuration it determines its own behavior over time. While it is not appropriate to say that one subset of variables causes another to move, it is permissible to speak of a change in a given parameter or datum as causing changes in the system or in its behavior over time (Samuelson 1947, p. 315n).

The point is easily understandable if we consider the early formulations of dynamic models, such as Samuelson’s own, Kalecki’s and Tinbergen’s. They started from systems of \( n \) equation and \( n \) variables (including some lags and/or derivatives) representing the relationships between the said variables. The system was then reduced to a single solvable (analytically or computationally) equation in one variable incorporating \( n \) of its states. Nothing prescribed \textit{a priori} which of the \( n \) variables should be chosen, for they are all on the same footing.64 Samuelson’s other point is also interesting: the system’s own dynamics is fully determinate and follows a path defined once and for all, where one cannot properly speak of causes. On the other hand, a change in the initial conditions or in the parameters alters the system’s dynamics, and whatever originates such alterations can therefore be properly considered a cause of the system’s behavior.65

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63 It is interesting to note that a fully deterministic interpretation of the laws of causation was already formulated by Briaune 1857; see Le Gall 2006.

64 Causal interpretations, if any, have to be superimposed to the mathematical model. Kalecki’s example illustrates the point well. He made himself a point of formulating and solving his system in terms of the variable investment, as he believed investment decisions to be the \textit{pièce de résistance} of capitalist dynamics (see e.g. Kalecki 1968, p. 263). But such a choice is completely extraneous to the mathematics of the model; the solution would have been exactly the same if Kalecki chose income, consumption, or profits.

65 If the system is nonlinear (or the alteration causes it to become nonlinear), even extremely small variations in the value of some parameters close to certain thresholds can cause the system to shift to a completely different regime. This (unknown to Samuelson at the time of writing) opens the problem of whether such alterations admit of a causal interpretation.
But only *una tantum*, for as the effects of this cause are incorporated in the system, its dynamics is again fully determined.

The second interpretation of causal relationships in the new setting was enunciated by Mitchell even before Frisch’s formulation. Mitchell endorsed the functional view of causation, widespread among philosophers and physicists at the time:

In the progress of knowledge, causal explanations are commonly an early stage in the advance towards analytical description. The more complete the theory of any subject becomes in content, the more mathematical in form, the less it invokes causation. In business-cycle theory, the transformation from causal explanations into analytic description is being hastened by free use of statistical materials and methods. What time series can be made to show are functional relationships.66 (Mitchell 1927, pp. 54–5; see also pp. 470–1).

In the light of the death of crises and of the radical alteration in the concept and role of causality, one may wonder whether passing through the principle of causality as described in this paper was a logical necessity or just one among the possible choices. Although such reflections are lacking in some writers, and a few writers skipped the reflection on crises to deal straight away with cycles as a whole (see footnote 2), it is striking that this approach was followed by some of those who are now recognized as the main pioneers of cycle studies, namely, Juglar, Mills and Jevons. The actual importance of the adoption of the epistemic principle that one should look for a common, true cause as opposed to accidental, proximate ones as the origin of the whole series of events, is probably linked to the fact that at first the problem was perceived as that of the return of crises, rather than that of the cycle. With the benefit of hindsight one may suppose there is not much difference, but the concept of the cycle as a whole is indeed, as stated by Mills, ‘a fact of a new order’, 67 intrinsically different not only from disconnected crises but also from *returning* crises. In a cycle there are no privileged phases, they all belong together, while the theories of periodical crises focused on crises not only because of their dramatic effect on society: what called for an explanation was the breach of equilibrium, understood as the normal state of advance.68 In spite of the use of words such as ‘waves’, ‘fluctuations’, ‘circles’ and ‘cycles’, the concept of a cycle was still new (or even extraneous) to these early inquirers,69 while the idea of a repetition of a certain event was

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66 It should be stressed that the problem highlighted by Samuelson does not lie with the notion of ‘causation’ itself, but in its relation with a new kind of description of the phenomenon. Mitchell’s qualification of the forgoing of causal explanations as a ‘progress’ is part of the rhetorical strategy described in the previous section: what he is really doing is to qualify his own approach as superior to the preceding, somehow primitive ones.

67 Mills 1868, p. 13. Mills was indeed the first and, to the best of my knowledge, only XIX century writer to suggest that the cycle should be considered as the ‘normal’ behavior of the economic system. The next instance was Robertson’s *Study of industrial fluctuations* (1915).

68 Some writers interpreted crises as the breach itself, while others saw the crisis as the resolution of the disequilibrium that sets in the abnormally accelerated late stages of the advance. Be as it is, crises had to do with something going wrong in the system.

69 An early user who was indeed familiar with the concept of a cycle, Hyde Clarke (an engineer), indeed avoided recurring to the causation principle (Clarke 1838, 1847).
much easier to grasp. Cycles were not ‘there’ to be seen: it was a concept that had to be fabricated anew.

The breach with tradition was gradual. Events forced economists to admit that occasionally crises break out, which was explained with reference to the contingencies of the moment. The frequent, and somehow regular, occurrence of these events suggested (especially to pamphleteers) that they may not be isolated, and induced to look for a common pattern, but a pattern still understood in terms of recurrent interruption of normality. Only after several decades of collective work of revision of the concept of crisis this orderliness could be understood as a true cycle, to be described in terms of uninterrupted motion, and the emphasis on one phase of this cycle could give place to a description of the movement as a whole. Eventually, the old metaphor of the crisis as a disease, as opposed to the healthy state of the system, was substituted by the analogy of a pendulum, harmoniously and symmetrically swinging all the way. A disease needs a cause; the pendulum, once set in motion, keeps swinging. On the one hand, this opened the quest for the source of energy to compensate for the dissipation, and gave scope for a further reinterpretation, in terms of shocks, of the accidental causes. On the other hand, the introduction of nonlinearities in those dynamic systems opened up a host of new conceivable behaviors of the economy: self-sustained movement, rather than a steady state, becomes the theoretical norm, and the problem of causation takes new forms. But these are other stories and shall be told another time.

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70 This was not, of course, the only metaphor (the waves of the ocean were also often referred to), and more often than not it was used more with an illustrative than a heuristic function (an exception was Juglar: see Frobert and Hamouda 2005), but was quite common, easy to use, and fully compatible with the theoretical idea that prosperity is the natural, ‘healthy’ state of the system the abandonment of which needs to be explained by a special cause (for a number of examples of the uses of this analogy see Besomi Forthcoming 1).
71 For an enlightening discussion of the pendulum metaphor in this connection see Louçã 2001.
72 Unless otherwise specified, translations from sources in non-English languages are mine.

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