

## On Uncertainty in Keynesian Macroeconomics and German *Ordnungstheorie*\*

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### Abstract

The debate on Keynes glossed over his intention to replace classical economic theory by an approach considering uncertainty in terms of there being no scientific basis on which to form calculable probability. Keynes takes this into account by replacing the (neo-)classical assumption of perfectly rational optimizing behavior by psychologically justified behavioral assumptions. As for the rest, he hangs on to the neoclassical model in a “macroeconomic” sense. Later developments based on the micro-foundations of macroeconomics disregard the Keynesian uncertainty problem entirely. Given that, Keynesians do not have much choice but to accept the older social control style of David Hume, also applied by German *Ordnungstheorie* (system theory) – and, indeed, there are no reasons for Keynesians to turn their backs on German *Ordnungstheorie*.

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### 1. Prologue

Not being a historian of economic thought but only an aging economic theorist, I am naïve enough to take theoretical economic texts literally. Of course, I know that writings of great economists like John Maynard Keynes or Walter Eucken are understood by some of us as fundamentally cryptic texts that leave it to the reader to interpret what they mean. Both this view and my own are debatable. Both relate to how we understand economics – either as an empirical science (believing in empirically supported “cause-effect” style analysis) or as a philosophy (subject to the art of rhetoric). In this paper, I am applying the first, naïve perspective because it appears to be the best way to give the reader an idea of the issue under concern.

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## 2. The Problem

Keynes' *General Theory* (1973 [1936]) is, as Samuelson points out, "... a badly written book, poorly organized" (1947, 190). Still, it was a great success. But, as Samuelson adds, neither he nor anyone else in Cambridge, Massachusetts, knew what it was about for some 12 or 18 months after its publication. "Indeed, until the appearance of the mathematical models of Meade, Lange, Hicks, and Harrod there is reason to believe that Keynes himself did not truly understand his own analysis" (*ibid.*, 188).

Indeed, the image economists of the fifties or sixties had of Keynesian theory did not come from him but some of his interpreters among them, in particular, Hicks. The standard textbook models of the IS-LM type are based on Hicks (1937). How Keynes intended to answer his problem, however, remains a mystery. Also, what he intended to show is not precisely expressed. He says in his first chapter:

"I shall argue that the postulates of the classical theory are applicable to a special case only and not to the general case, the situation which it assumes being a limited point of the possible positions of equilibrium" (Keynes 1973 [1936], 3).

This claim brought about intense debate on what became known as the Keynesian theory of unemployment equilibrium. Less discussed – if at all – was, however, the Keynesian criticism of the classical assumption of perfect foresight that underlies the *General Theory*. Keynes refers specifically to this defect in his reaction to the first reviews of his book (Keynes 1973 [1937], 112). Certainly, he emphasized that the classical school – in the sense of the economics of Ricardo and his followers<sup>1</sup> – does not rule out risks but assumed them to be given "in a definite and calculable form." In other words, classical theory presumed that uncertainty could be reduced "to the same calculable status as that of certainty itself." Keynes adds that "[a]ctually, however, we have, as a rule, only the vaguest idea of any but the most direct consequences of our acts." One of the most important economic activities would be that of the accumulation and administration of wealth. Indeed, "[t]he whole object of accumulation of wealth is to produce results, or potential results, at a comparatively distant, sometimes at an indefinitely distant, date" (*ibid.*, 113).

Thus, the classical approach would hardly work in a world in which investments "for an indefinitely postponed future" are important. In the case of (Knightian) uncertainty, there would be no scientific basis on which we could form any calculable probability whatsoever. In summing up Keynes writes:

"I accuse the classical theory of being itself one of these pretty, polite techniques, which tries to deal with the present by abstracting from the fact that we know very little about the future" (*ibid.*, 115).

<sup>1</sup> Including "... the *followers* of Ricardo, those, that is to say, who adopted and perfected the theory of Ricardian economics ..." (Keynes 1973 [1936], 3, footnote 1).

It would be this perspective that unavoidably leads classical economists to misleading judgments – in particular in their treatment of money and interest.<sup>2</sup> This insight and his emphasis on the role of expectations is what authors like Hutchison describe as Keynes’ “most important fundamental contribution” (1980, 15).

If “the future is not ours to see,” constrained optimization considerations are pointless. Thus, in his *General Theory*, Keynes replaces the assumption of the perfectly rational utility-maximizing man by psychologically justified behavioral assumptions. The three well-known fundamental psychological factors of Keynes are:

- the psychological propensity to consume (or save)
- the psychological attitude towards liquidity
- the psychological expectation of future yield from capital assets (Keynes 1973 [1936], 246 f.).

Keynes almost fills half of his book with the description and explanation of these three fundamental psychological factors. They would determine the “effective demand”<sup>3</sup> at which the economy is in a specific Keynesian equilibrium. It is, thus, of interest to ask “what hypothetical psychological propensities would lead to a stable system; and then, whether these propensities can be plausibly described, on our general knowledge of contemporary human nature, to the world in which we live” (ibid., 250).

From that angle the “Keynesian Revolution” consists of the substitution of the classic assumption of perfect individual rationality by psychologically explained behavioral assumptions facing imperfect individual knowledge of what the future will bring. As for the rest, Keynes adapts the mechanical style of the classical model dating back to Isaac Newton, etc.<sup>4</sup>

### **3. J. R. Hicks: “Mr. Keynes and the ‘Classics:’ A Suggested Interpretation”**

Alfred Marshall, who favored the distinction between short-run and long-run analysis, dominated the analytical style of reasoning of (English-speaking) economists at that time.<sup>5</sup> Hicks (1946) used this style of reasoning in his book

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<sup>2</sup> “Being based on flimsy foundations, expectations of the future are subject to sudden changes” (Keynes 1973 [1937], 114).

<sup>3</sup> “... the aggregate income (or proceeds) which the entrepreneurs expect to receive ... from current employment which they decide to give” (Keynes 1973 [1936], 55).

<sup>4</sup> See Richter (2015, chapters 2 and 10).

<sup>5</sup> Actually Keynes distanced himself early on from long-run analysis. Frequently referred to is his remark: “in the long run we are all dead” (Keynes 1923, chapter 3).

*Value and Capital*. There he explained – in his own way – general equilibrium theory to mainly English-reading economists of what at this time had only been published in French or Italian. As a by-product, he became the leading interpreter of Keynesian Economics with his IS-LM diagram. His elegant presentation is still today standard-fare in introductory macroeconomics textbooks.

In *Value and Capital*, Hicks translated the General Equilibrium Theory of Léon Walras and Vilfredo Pareto into what he calls temporary equilibrium theory. His unit of time – the short period – is the “Hicksian Week” within which everybody is perfectly informed, and only spot transactions are effected (Hicks 1946, 140). It is, so to speak, an out of focus “present” (in which everybody is fully informed about everything). Economic dynamics consists of a series of such (dated) temporary equilibria – so to speak a sequence of stationary images of short-term equilibria – like the pictures on a filmstrip. This style of reasoning – related to one week instead of a point of time – is sufficiently blurred to disguise the involved information problem. Within the “Hicksian Week” (or at that moment), actors are both waiting for the result of the Walrasian *tâtonnement* process and fully informed about commodities, prices, etc. In this respect, there exists neither risk nor uncertainty. They are a problem only with respect to the future (the weeks after each on-going “Hicksian Week”). But even then, Hicks assumes, different from Keynes, “... that people expect particular definite prices, that they have *certain* price-expectations.” (ibid., 126).<sup>6</sup> Hicks concludes:

“By the device of definite expectations, we are enabled to use the same analysis as in statics to set out the equilibrium of the private individual and the firm, to determine the dependence of plans on current prices and expected prices. Taking this together with the fact that we have preserved the concept of market equilibrium, the essentials of static analysis are still available to us” (ibid., 127).

The model of temporary equilibria is the simplest case of quasi-dynamic period analysis. Changes in the stock of productive capital are neglected; wages, prices, and interest rates reach their equilibrium value immediately (within the “Hicksian Week” in which all spot prices are negotiated by some *tâtonnement* process). In this sense the model is always in equilibrium, there always exists full employment (see Leijonhufvud 1968, 50 ff.). Thus, this model cannot explain the Keynesian problem of underemployment equilibrium.

A simple way out is to assume prices and wages to be “sticky,” i.e., assuming they are fixed in the short term (i.e., within the “Hicksian Week,” which is a sufficiently blurred concept for that purpose). Assume now that the system is disturbed by an unexpected change in, say, autonomous investments  $I^a$ . In that

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<sup>6</sup> Hicks continues: “But we shall be prepared on occasion to interpret these certain expectations as being those particular figures which best represent the uncertain expectations of reality.”

case, it may be plausibly assumed that firms adapt supply of products and demand for labor with their feasible sales (net social product  $Y$ ), and similarly that consumers observe the level of their realized (national) income ( $Y$ ). Investments would continue to be determined by the interest rate  $i$ . Demand and supply of consumer goods and labor services are in this case no more controlled by wages and prices but by national income  $Y$  or “effective demand.” As a consequence unemployment and (temporary) equilibrium in the (aggregate) commodity market are compatible, making underemployment equilibrium feasible. The Hicksian IS-LM diagram represents the solution to the underlying system of two equations in the two variables  $Y$  and  $i$  graphically. Consumption is determined by the absolute income hypothesis  $C(Y)$ , investment demand by the nominal interest  $I(i)$ . Both variables also determine desired cash balances. Among the givens are the supplies of money and labor in addition to “sticky” commodity prices and wages.<sup>7</sup>

Even easier than the IS-LM diagram is the interpretation of Keynes’s *General Theory* by assuming given not only prices and wages but also interest rates – and thus investment demand  $I^n$ . In that case, the Hicksian model is reduced to one equation in one unknown, (real) national income  $Y$ . The equilibrium level of  $Y$  represents what Keynes calls *effective demand*.

If  $Y_f$  denotes national income at full employment (our policy target), and if we add to our equation another variable – government expenditures  $G$  as our policy instrument – we may read it as an equation that determines government expenditures  $G = G_f$  at full employment income  $Y_f$ .<sup>8</sup> That is a still crazier idea for classical economists. It played a central role in the debate on Keynes’s *General Theory*.

This model underlies the famous theory of the investment multiplier. All one needs to do to achieve full employment is to extend  $G$  to a small fraction of the required increase in  $Y$ . This simple model was enthusiastically absorbed by engineers, like by Carl Föhl (1955) in Germany, who presented it in the form of a flow diagram. Coddington (1976) dubbed this interpretation “hydraulic Keynesianism.” To this day, it is living on in public debates (sadly, also by the *Economist* (Anon. 2015a, 14)<sup>9</sup> in its critique of Chancellor Merkel’s austerity policy towards Mediterranean Eurozone members).

<sup>7</sup> The IS-LM Diagram is an early description of what Samuelson in the 1955 edition of his *Economics* calls the “neoclassical synthesis” [of micro- and macroeconomics]. The mature synthesis is discussed in Samuelson (1967). See also, (Goodfriend and King 1997, 233, footnote 1).

<sup>8</sup>  $C(Y_f) + I^n + G = Y_f$ .

<sup>9</sup> See the subsection “Spend, Spend, Spend.”

#### 4. The Micro-Foundations of Macroeconomics

Neoclassical economics tends to devour its enemies. Unsurprisingly, not before too long the call for the micro-foundations of macroeconomics sounded. It was put into practice disregarding Keynes's criticism "that we know very little about the future" (1973 [1937], 115). It returned to elements of neoclassical economics but stuck to Keynesian process analysis, and assumed the shape of two types of analysis:

a) *Disequilibrium Analysis based on Clower's "dual decision hypothesis" (1965, 118).*

Clower argued that if the price mechanism stops working, consumers switch to "quantity rationing." Malinvaud (1977, 4 f.) extended the idea, assuming that aggregate consumers maximize their utility subject to their present (national) income  $Y$ . Similarly, aggregate firms maximize their profits subject to aggregate employment  $N$ .<sup>10</sup> The adjustment process of "disequilibrium theory" is copied from the Walrasian *tâtonnement* process with quantities being called out instead of prices (Grandmont (1977, 175); Benassy (1975, 504 and 509). From that perspective, Keynesian disequilibrium analysis becomes "temporary equilibrium analysis with quantity rationing" (Malinvaud 1977, 4). However, the resulting macro-model turned out to be rather clumsy, cumbersome to teach and unsuited for econometric analysis.

b) *The "New Keynesian Macroeconomics," surveyed by Romer (1993) and others.*<sup>11</sup>

It returns to elements of classical economics though it sticks to Keynesian process analysis. The classical hypothesis of *perfect foresight* is replaced by the assumption of *rational expectations*<sup>12</sup> or other hypotheses on the formation of expectations combined with suitable propositions on the constrained optimization of utility (for households) resp. profits (for firms), and assumptions on market imperfections such as "staggered prices" (Calvo 1983). It gave rise to the development of the "New Neoclassical Synthesis" (NNS) as described by Goodfriend and King (1997), which became the ruling model underlying today's monetary policy. The economy is described by some kind of Walrasian

<sup>10</sup> The problem of consumers and producers is answered (or better ignored) by Samuelson's "honest method" (1947, 144). That is, aggregate commodities, services, financial assets are seen as one homogenous good or one financial title, etc.; aggregate firms are treated as one firm, aggregate consumers as one consumer, etc.

<sup>11</sup> For a textbook-style presentation see Walsh (2003, 232 – 256).

<sup>12</sup> Yet the hypothesis of rational expectations does not answer the Keynesian problem that we "simply do not know" what the future will bring. It is no more than "...the predictions of the relevant economic theory" (Muth 1961, 316 f.).

general equilibrium theory polluted by assumptions on imperfect competition and imperfect foresight.<sup>13</sup> They are key features of models like the new FRB/US Macroeconomic Model (Brayton et al. 1997). Goodfriend and King characterize the New Neoclassical Synthesis model of the USA as follows:

“The New Neoclassical Synthesis inherits the spirit of the old, in that it combines Keynesian and classical elements. Methodologically, the new synthesis involves the systematic application of *intertemporal optimization* and *rational expectations* as stressed by Robert Lucas. ... Moreover, the new synthesis also embodies the insights of monetarists, such as Milton Friedman and Karl Brunner, regarding the theory and practice of monetary policy ... The New Neoclassical Synthesis (NNS) suggests a set of major conclusions about the role of *monetary policy*. [*Viz.*, that it can have first] ... an important effect on real economic activity ... Second, ... ,the model suggests little long-run trade-off between inflation and real activity. Third, the model suggests significant gains from eliminating inflation ... Fourth, the model implies that credibility plays an important role in understanding the effects of monetary policy ... The new synthesis ... implies a monetary policy regime of inflation targets, which vary relatively little through time” (1997, 232).

The “New Keynesian Macroeconomics” keeps within the limits of neoclassical economics with perfect foresight, and sticks to the Hicksian two-period world of “today” and “tomorrow.”<sup>14</sup> In the world of Patinkin “... all goods of the economy [are divided] into four composite categories: labor services, commodities, bonds,<sup>15</sup> and money. To each of these categories, there corresponds a market, a price, an aggregate demand function, and an aggregate supply function” (1965, 199). Patinkin continues, adding that “[t]here are four markets. For each market, there are three equations: a demand equation, a supply equation, and an equilibrium equation, etc.” He resumes, noting that “[b]y Walras’ Law, only three of these equations are independent.<sup>16</sup> Correspondingly, there are only three unknown variables to be determined: the money wage rate, the price level, and the rate of interest” (ibid., 228 f.).

Because of Walras’ Law, one of the four equations is dropped, usually the bonds equation, i.e. the equation characterizing the “capital market” or market for financial assets besides money. It is at this at which Minsky directs his criticism. He writes:

“Neoclassical price theory is limited to explaining how relative prices of currently produced goods adjust so that markets are cleared; the financial and capital-asset

<sup>13</sup> This would exclude the possibility of insurance contracts and allow an efficient risk distribution through the market as described by Arrow (1953) in his time-state-preference theory.

<sup>14</sup> Not mentioned are Arrow’s time-state-preference theory and the problem of efficient risk allocation.

<sup>15</sup> Or, in general, financial assets aside from money.

<sup>16</sup> For more on Walras’ Law, see Lange (1942, 50).

price-validating relations that must be satisfied if the economy is to be coherent are ignored” (1986, 141).

In fact, the occasional instabilities of financial markets are the sore point of capitalism as illustrated by the Great Depression or the Financial Crisis of 2007/08. Incomplete foresight or fundamental uncertainty play a vital role in this context. This is to be noted when returning to Keynes’ *General Theory* and its behavioral assumptions, which Keynes superimposed onto neoclassical economics models, and is closely linked to Newton’s celestial mechanics (Richter 2015, chapter 10).

Interestingly, much knowledge in macroeconomics is not required. Elementary business knowledge or experiences are sufficient, such as when the *Economist* (Anon. 2015b, 75) writes “... when the central bank cuts interest rates to stimulate the economy, the newly created credit may well be used not to buy new assets, but to buy existing properties. The result may be a speculative bubble ...” *Da capo al fine*. It would also have helped to consider possible consequences of the textbook example of the Keynesian “liquidity trap.”<sup>17</sup>

## 5. Two Different Approaches

Two fundamentally different analytical approaches are apparent:

- (a) Starting from an assumption that the research object of economics is an ergodic world for which history does *not* matter, and sticking to neoclassical microeconomics with the restriction that its celestial mechanics do not necessarily lead to general equilibrium. The criterion of “efficiency” is the condition of constrained optimization.
- (b) Starting from the opposite assumption that economics deals with a non-ergodic world for which history *does* matter. For that world, celestial mechanics do not function as an analytical technique – a way out is to use a different methodology, namely that of social control. The criterion of “efficiency” is the ability “of rapid adaptation to changes in the particular circumstances of time and place” (Hayek 1945, 524). North (1990, 80) speaks of “adaptive efficiency” of organizations or institutions.

*Regarding (a): The Economy Is an Ergodic World for which History Does Not Matter*<sup>18</sup>

In spite of his claim that price competition may lead to under-employment equilibria, Keynes sticks to elements of neoclassical microeconomics, imply-

<sup>17</sup> A textbook term, the problem is raised in Keynes’ *General Theory* (1973 [1936], 207).



ing that, institutions do not matter.<sup>19</sup> Mostly static equilibria are *modeled* (by his interpreters) such as the solutions of the IS-LM diagram. Either way, macroeconomic models are understood as the final equilibrium of an und-described economic *process*.<sup>20</sup> Our point is that if one thinks that way and somehow wishes to control the economic process to secure full employment (e.g. through interest rate policy), one must continually intervene into an ongoing process. Since interest rate policy alone might be insufficient, Keynes suggests, the state should strive for “a *somewhat comprehensive socialization of investment* [that] will prove the only means of securing an approximation to full employment” (1973 [1936], 378, emphasis added). Keynes does not see any reason that the

“... existing system seriously misemploys the factors of production which are in use. ... It is [rather] in determining the *volume*, not the *direction* of actual employment that the existing system has broken down.<sup>21</sup> [Beyond this] ... no obvious case is made out [by Keynes] for a system of State Socialism which would embrace most of the economic life of the community. It is not ownership of the instruments of production which it is important for the State to assume ... [Keynes concludes that if the state's] central controls succeed in establishing an aggregate volume of output corresponding to full employment as nearly as is practicable, the classical theory comes into its own again from this point onwards” (ibid., 379 f.).

Thus, for Keynes the state is the white knight, able to defeat the dragon of fundamental uncertainty. The problem Keynes does not mention is that “volume” and “allocation” of resources must be seen in tandem.

In lectures on macroeconomics, Keynes’ “Concluding Notes of the Social Philosophy towards which the General Theory might lead” (chapter 24 of his *General Theory*) play at most a marginal role. The main object was and still is

“... the Hicks-Hansen lines of thought that has led to the neoclassical synthesis, and the banal proposition that all would be well if a proper mix of monetary and fiscal policy can be achieved” (Minsky 1986, 140).

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<sup>18</sup> On the role of history, see Acemoglu and Robinson (2013, chapter 15). Also see footnote 29.

<sup>19</sup> See Furubotn and Richter (2005, 12 f.).

<sup>20</sup> Of course, one can also use systems of stochastic differential equations (of statistical physics) as done in the “New Keynesian Framework” of macroeconomics. Such systems can only be solved numerically, where coefficients are “calibrated” by applying parameters from similar models to be able to solve them numerically and to use them for simulation purposes (see Richter 2015, chapter 10).

<sup>21</sup> Though, in an earlier part of his book Keynes argued, the state (who?) would be “... in a position to calculate the marginal efficiency of capital-goods on long views and on the basis of the general social advantage, taking an ever greater responsibility for that directly organizing investment.” The reason is, the fluctuations in the marginal efficiency of capital would “... be too great to be offset by any practicable changes in the rate of interest” (1973 [1936], 164).

Passed over in silence is also the remark by Keynes in the German translation of his *General Theory* that his employment theory “is much more easily adapted to the conditions of a totalitarian state, than ... under conditions of free competition and a large measure of *laissez-faire*” (1973 [1936], xxvi).<sup>22</sup>

The defect of theoretical macroeconomics is that it rests – in spite of its basic problem of uncertainty – on Newtonian mechanics, for which “uncertainty” remains a foreign word. Even its idea of automatic stabilizers, such as the supposedly “built-in-flexibility” of income taxes<sup>23</sup> or its mathematical explanation of business fluctuations and economic growth<sup>24</sup> that culminated in dynamic stochastic general equilibrium theory<sup>25</sup> are part of applied mechanics. The forces of social control remain unmentioned, which may also explain why Keynes (and later Minsky) disregard the various social stabilizers slumbering in capitalist economies. Instead, Minsky puts forward his “financial instability hypothesis” by arguing:

“The way in which a speculative boom emerges and how an unstable crisis-prone financial and economic system develops are of particular importance in any description of the economic process that is relevant for this economy... The financial instability view makes much of the way in which ownership or operating control of capital assets are financed, something standard theory ignores” (1986, 173).<sup>26</sup>

He concludes

“... the existence of a complex financial system magnifies the number and the extent of money-now-money-later relations” (ibid., 175).

Trapped in the mechanistic style of neoclassical economics, Minsky disregards the possibilities of social control.<sup>27</sup> Instead of suggesting “a somewhat comprehensive socialization of investment” – indeed, a complex task – Minsky proposes to simply strive for *big government*, arguing that

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<sup>22</sup> I follow Hagemann (2015), who clearly rejects the insinuation that Keynes had sympathies for or was indifferent to the Nazi regime. I simply take him by his words. Keynes’ suggestion are “... more easily adapted to the conditions of a totalitarian state” than to the condition of an elected government that, in order to survive, must balance conflicting organized economic, social, environmental etc. interests. “*Globalsteuerung*” is the German magic word, introduced by Karl Schiller, West-German Federal Minister of Economics 1966–1972. For a German example see Ebel in Richter, Schlieper, Friedmann (1981, 612–647).

<sup>23</sup> See, e.g., Cohen (1959) as referred to in Richter et al. (1981, 275, n. 14); criticized, e.g., by Richter and Selten (1963).

<sup>24</sup> See, e.g., Baumol (1959) or Burmeister and Dobell (1970).

<sup>25</sup> Leijonhufvud regarded this as an intellectual enterprise that “has been bankrupted by the [financial] crisis” (2009, 755). See also Richter (2015, chapter 10).

<sup>26</sup> Paul Krugman summarizes Minsky’s financial instability hypothesis as following: “stability begets complacency, complacency begets carelessness and hence fragility, and fragility sets the stage for crisis” (2014).

<sup>27</sup> The neoclassical theory of the firm describes a fault-prone clock mechanism.

“[b]ig Government capitalism is more stable than small government capitalism: this is shown by both the experience of the past century and by an economic theory that allows for financial institutions. This greater stability is because of the impact of government deficits as a contra cyclical phenomenon in stabilizing profits” (1986, 292).

In any case, both Keynes and Minsky require the state to intervene into the economic process with the aim of realizing equilibrium in the sense of full employment, price stability, and greater equity. After the financial crisis of 2007/08, Keynesians like Lance Taylor go even further, by demanding the building of “... a firewall between finance and the real economy so as to shield the rest of us from the bankers’ excesses” (2010, 355).

As most economists do, Minsky prides himself that his “primary aim is a humane economy as a first step toward a humane society” (1986, 293). No doubt, a high aim. To achieve it, *big government* appears to be easier to enforce than Keynes’ “somewhat comprehensive socialization of investment.” But both techniques may lead societies towards some sort of Hayekian *Road to Serfdom*.<sup>28</sup>

*Regarding (b): The Economy is a Non-Ergodic World for Which History Matters*<sup>29</sup>

If we accept that the subject of economics is a *non-ergodic world*, institutions and history matter. Institutions are formal or informal incentives, bringing about social conventions that help to “reduce uncertainty by establishing a stable (but not necessarily efficient) structure to human interaction” (North 1990, 6).<sup>30</sup> In this world, social control plays a central role. So does the concept of equilibrium – as in Newtonian mechanics – except that the explanations of how it may be achieved differ essentially from Newton’s celestial mechanics.<sup>31</sup> In this respect, economists are borrowing from jurisprudence, sociology and

<sup>28</sup> See Hayek (1944).

<sup>29</sup> Cf. Acemoglu and Robinson: “History is key, since it is historical processes that, via institutional drift, create the differences that may become consequential during critical junctures [historical turning points]. ... we have to study history to understand the nature of institutional differences that have been historically structured. Yet our theory does not imply historical determinism – or any kind of determinism” (2013, 432).

<sup>30</sup> North further argues that the stability of institutions would not contradict the fact that they are changing.

<sup>31</sup> The basic idea remains the same as illustrated by Luhmann’s concept of “*autopoietic systems*” [= *self-organizing systems*] (Luhmann 1997, 82 f.). Albert explains: “The representatives of this tradition were looking for the foundations of the physical reasons for the phenomena in question and for the regularity to which they are subject. In this way, they tried to integrate the sphere of human and thus social life into the epistemological program of theoretical ‘Real Sciences’ ... hence transferring the research style of natural sciences to that of social life: Political Economics” (1978, 63; translated by author).

political science. Representatives of this view include the partisans of German *Ordnungspolitik* – among them Walter Eucken (1950).<sup>32</sup> Trusting in the stabilizing forces of social control such as the “price mechanism” they demand an appropriate norm system – or *order* – whose development must not be left to *laissez-faire* but designed and enforced by the state.<sup>33 34</sup> The basic norms or *constituent principles* of Eucken’s *Ordnungspolitik* lean, among others, on the fundamental laws of nature. They assume the creation of a *functioning price system* (1952a, 254) and consist of the following six constituent principles: stable money,<sup>35</sup> open markets, private property, freedom of contract (excluding monopolistic agreements), personal liability, and constancy of economic policy (1952b, 67).<sup>36</sup>

The problem is that Eucken understood his constituent principles somewhat too literally. Thus he dislikes, for example, the institution of limited liability for

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<sup>32</sup> For a survey see Richter (2015, chapter 9).

<sup>33</sup> Eucken does not believe in self-organizing economic systems. For him “... it has become obvious that the modern industrialized world does not of itself produce an effective economic system but requires certain controlling constitutional principles as a foundation that are to be issued and guaranteed by the state” (1950, 315).

<sup>34</sup> Taken literally, the metaphor of the *invisible hand* relates not to the formation of an economic constitution or order as Taylor (2010, 5) assumes, for example. It rather relates to the effect of the market mechanism itself, namely the effect of (expected) annual revenue of invested capital [in international trade]. Smith writes:

“By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an *invisible hand* to promote an end which was no part of his intention. ... By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it” (1937 [1776], 423; emphasis added).

<sup>35</sup> Eucken speaks of the “primacy of currency policy” (1952a, 255).

<sup>36</sup> A more extensive description of German *Ordnungstheorie* by this author appeared in a 2012 issue of this journal. It relates essentially to Walter Eucken (1950) who attempted to strike a balance between the economics of the German Historical School, still relevant in Germany of the 1930s, and its opposing neoclassical analysis. The paper starts with a brief description of Eucken’s morphological approach, his “isolated abstraction,” as an analytical method focusing on a description of the institutional framework of the analyzed economy with only vague assumptions of human wants, behavior, behavioral constraints, etc. The target of Eucken’s *Ordnungspolitik* is to minimize power instead of striving for Pareto efficiency. Eucken’s questioning of the regulative ability of *laissez-faire* anticipates (instinctively) the consequences of Olson’s logic of collective action. Eucken, together with the other members of the Freiburg School, demand from the state the establishment and guarantee of an economic constitution of a free market economy based on David Hume’s principles of natural law: private property, freedom of contract and personal liability (Eucken 1952a). The paper continues with a new institutional discussion of Eucken’s *ordo-liberal* principles of *Ordnungspolitik*, which served as the basis of the West German *Wirtschaftswunder* after the currency reform of 1948 (see Richter 1979). It ends with a critique of Eucken’s deliberations and some reflections on Douglass North’s “adaptive efficiency” as another substitute for the empty concept of Pareto efficiency.

companies, which allows to shift the risk of uncertain business undertakings. Arrow observes: "... there are no other major institutions in which the shifting of risk through the market appears in such an explicit form as in insurance and common stocks" (1970, 136). Another example: Eucken's basic principle of a "functioning price system" disregards the benefits of non-market organizations like firms or public organizations. Their existence is, among other things, economically justified by transaction costs (Coase 1937) and uncertainty (Williamson 1985, 56 ff.). For Eucken, however, non-market organizations are simply the result of monopolistic inefficiencies. Some non-market organizations – such as the administrative consequences of bankruptcy law – are unavoidable administrative means to overcome the results of unforeseen economic breakdowns that are foreign to neoclassical economics. These examples illustrate that a "functioning price system" must not always be a blessing (see also Arrow 1970, 140).

Regarding business fluctuations, Eucken suspects that they are rather caused rather than mitigated by business cycle policy. He criticizes that no attempts are made to stabilize the economy by competition policy, by reforms of the monetary order or by constancy of economic policy. Instead, business cycle policy consists today

"... of attempts to overcome or avoid depressions by direct interventions into the economic process: through policies of low interest rates, credit expansion, government purchases, price fixing, foreign exchange controls etc. Thus, it is attempted to replace the lack of private investments by government investments, instead of correcting the defects of the price mechanism that cause the mismatch between demand and supply" (1952a, 310; translated by author).

Eucken concludes that all stabilization policy has achieved is the evolution of centrally administered economic control mechanisms without eliminating the "problem of business fluctuations and mass unemployment" (311). In any case, for Eucken, major disturbances like the Great Depression of 1929–1933 are caused by exogenous disturbances<sup>37</sup> of the "rules of the game." The problem of business cycle policy would not be "... to avoid disproportionalities [which occur anyway], but the uninterrupted existence of an [institutional] mechanism that is able to restore equilibrium" (ibid., 312).

Instead of trying to square the circle, stabilization policy should ensure the "adaptive efficiency" of the economy in the sense of North (1990). That includes the establishment of an organization (an order) of asset markets, which ensures the effectiveness of the constitutional principle of liability (like the establishment of stock exchanges). It would help to avoid the collapse of asset markets as a consequence of the lemons principle (Akerlof 1970; Hellwig 2008, 9). As for the rest, it is not only private actors but also lawmakers and public servants who must observe the ruling order of their market economy.

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<sup>37</sup> By monopolists, the government or other forces.

## 6. Two Perspectives on the Financial Crisis of 2007/08

Economists do not agree on the reasons for the financial crisis of 2007/08.<sup>38</sup> To illustrate, we shall present the arguments of both – the Keynes/Minsky and the Hume/Smithian style of analysis – briefly. The latter comes closest to German *Ordnungstheorie*, which still appears to be a book of seven seals for many Anglo-Saxon economists. For the Keynes/Minsky perspective we shall draw on arguments by Lance Taylor (2010); for the Hume/Smithian style of analysis, we shall refer to Peter J. Wallison (2015) *en lieu* of German *Ordnungstheorie*.

### 6.1 The Keynes/Minsky Perspective

This is a mechanistic perspective, characterized by the question Queen Elizabeth II asked on the occasion of a visit to the Department of Economics of the London School of Economics to discuss the financial crisis: “Why did nobody see it coming?”<sup>39</sup> Typically, the Keynesian Lance Taylor replies in an ideological sense: it was “the neoliberal political economy” that led (the USA) into the crisis. Taylor continues:

“Reasons why it broke down can be read from the data, with major shifts in behavior on the real and financial side of the U.S. and global economies playing crucial roles. Redistribution of income and wealth among economic groups was especially important ... [finally] economic actors’ imperfect cognitive perception about the economic system combined with their limited ability to manipulate it [led to] the near collapse of the neoliberal system” (2010, 337).

These developments would have started with the election of Ronald Reagan and “... the dismantling of financial regulation, successful attacks on labor’s bargaining power, and an ideological shift in support of God and capitalism.” As a consequence, “inequality in the size distribution of income went up markedly.” Taylor, of course, observed that house prices “roughly doubled over twenty-five years,” which explains the “steady relaxation of regulatory controls over finance imposed during the New Deal.” He concludes: “Beyond ... changes in ideology, ... the intellectual rationale for much of the shift in regulation came from the abolition of Keynesian concepts in macroeconomic theory and the orogeny of finance theory beginning in the 1950s” (ibid., 351 f.).

<sup>38</sup> Hardly a surprise for a rhetorical science, see McCloskey (1983).

<sup>39</sup> The reply of the British Academy was, in brief, “that the big failures lay in not recognizing how large the risks were to the system as a whole, how bad risk management was, and how big the mess bequeathed by the crisis would turn out to be” (Wolf 2014, 194). But only five years before the financial crisis Robert Lucas claimed in his address as President of the American Economic Association: “Its [= macroeconomics’] central problem of depression prevention has been solved, for all practical purposes, and has in fact been solved for many decades” (2003, 1).

*Discussion:* Taylor follows the majority opinion of the *Financial Crisis Inquiry Report* (2011),<sup>40</sup> which according to Wallison suggests “that the crisis could have been avoided if the private sector had not taken so many risks and government regulators had not been asleep at the switch” (2011).<sup>41</sup> Like most Keynesians,<sup>42</sup> he argues as if the economy were a machine, more recently even with agents equipped with artificial intelligence (cf. Sargent 1995).<sup>43</sup> It is in this line of thought that the achievement of “high employment level” and “steady and appropriate economic growth”<sup>44</sup> are credited to the state by its interest rate policy, deficit spending, bailouts of banks, financial regulations, etc. The evolving bailout mentality gave impetus to studies on questions of social control, such as, *How Bankruptcy Reform Can End ‘Too Big to Fail.’*<sup>45</sup> Since business fluctuations or financial crises are the flipside of capitalism, and since the legal framework of the economy – its “economic order” or constitution – plays a vital role, it seems obvious to at least extend Keynesian “quantitative economic policy” by aspects of German *Ordnungspolitik*, i.e., by keeping an attentive eye on the existing social control mechanism and how it could be improved. Practitioners of economic policy all over the world likely do this anyway. So why not elevate this style of reasoning into the higher world of science? This brings us to the next subsection:

## 6.2 The Hume/Smithian Perspective

Wallison’s presentation of the financial crisis of 2007/08 looks like a textbook example of German *Ordnungstheorie*.<sup>46</sup> He stresses the role of “affordable housing policy” and argues that while banks originally were required to use safe and sound lending practices, the “affordable housing goals” required them to become “innovative” or “flexible” in the granting of credit to low and

<sup>40</sup> See *Financial Crisis Inquiry Report* (2011).

<sup>41</sup> *The Financial Crisis Inquiry Report* (2011, xv–xxviii) is certainly more detailed; it enumerates eight reasons.

<sup>42</sup> “Keynesians” referred to here in a general sense. I myself followed in my lectures on macroeconomics – what is now called – the Neo-Keynesian view. See Richter et al. (1981).

<sup>43</sup> Sargent proposes to build models “with boundedly rational agents ... by expelling rational agents from our model environments and replacing them with ‘artificially intelligent’ agents who behave like econometricians. These ‘econometricians’ theorize, estimate, and adapt in attempting to *learn about probability distributions* which, under rational expectations, they already know” (Sargent 1995, 3; emphasis added). That is, Sargent assumes that his agents know all relevant stochastic variables. There exists no fundamental uncertainty, which explains Lucas’ optimism.

<sup>44</sup> See the German *Gesetz zur Förderung der Stabilität und des Wachstums der Wirtschaft (StWG)*, of June 8 1967.

<sup>45</sup> See Scott et al. (2015).

<sup>46</sup> This paragraph relies heavily on Wallison (2009).

moderate income borrowers. These looser standards soon spread to the credit markets that vastly increased the availability of credit for mortgages. Wallison continues that this caused speculation in housing, which ultimately led to the bubble in housing prices. Rising house prices concealed the basic problems for years. But after house prices stopped rising, the damage done by relaxed loan standards was revealed. In addition, state-based residential finance laws gave homeowners too free options that contributed substantially to the financial crisis. Thus, any homeowner could, without penalty, refinance a mortgage whenever interest rates fell or home prices rose to a point where there was significant equity in the home, enabling them to extract any equity that had accumulated between the original financing transaction and any subsequent refinancing. The result was so-called cash-out refinancing, in which homeowners were able to use their homes like savings accounts, drawing out funds to buy cars, boats, or second homes. Furthermore, different from German mortgage law, most states in the United States allow the designation of mortgages as being “without recourse.” That means, in essence, “... defaulting homeowners are not personally responsible for paying any difference between the value of the home and the principal amount of the mortgage obligation, or that the process for enforcing this obligation is so burdensome and time-consuming that lenders simply do not bother. In other words, such homeowners could walk away from their ‘underwater’ mortgages” (Wallison 2009).

Of course, there were also “... greedy investment bankers; incompetent rating agencies; irresponsible housing speculators; shortsighted homeowners; and predatory mortgage brokers, lenders, and borrowers – all played a part, but they were only following the economic incentives that government policy laid out for them.” Wallison concludes: If we are really serious about preventing a recurrence of this crisis, rather than increasing the power of the government over the economy, our first order of business should be to correct the destructive housing policies of the U.S. government (ibid.).<sup>47</sup>

*Discussion:* Wallison’s analysis comes close to the arguments of German *Ordnungspolitik*. That is not surprising, since they are near replicas of the principles of classical British economics, though, with one important exception: Eucken’s maxim is that the establishment of the economic constitution (or order) must not be left to *laissez-faire*.<sup>48</sup> Today, this axiom can be justified as following by Olson’s theory of collective action (1965): developed markets are collective goods.<sup>49</sup> That is true in particular of financial markets whose traded

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<sup>47</sup> According to the *Economist*, not much has happened so far. The article concludes: “... until America’s mortgage monster [worth \$26 trillion – more than America’s stock market] is brought to heel, the task of making finance safer will remain half done” (Anon. 2016).

<sup>48</sup> Which corresponds at least to the “Austrian” reading of British classical economic principles (see Menger 1963 [1883]).



products are difficult to monitor<sup>50</sup> and where money claims are difficult to enforce. Akerlof's lemons principle raises its head, entailing "the incentive to originate and sell low-quality claims that may (and, in fact, did) end up as lemons or 'toxic assets'" (Richter 2009). – But "... not all risks which it would be desirable to shift can be shifted through the market" (Arrow 1970, 139).<sup>51</sup> Financial markets are more or less incomplete, which can be allowed for by either suitable debt contracts or by non-market constructs such as financial firms, private or public regulation, bankruptcy law, etc. (see Arrow 1970, 141). As for the latter, financial firms may be understood as organizational answers to transaction costs, imperfect foresight, and bounded rationality. They comprise contracts between a collectivity of actors (firm owners and staff) whose governance structure (organization) allows them to react effectively to unforeseen events (see Williamson 1985, chapter 3).

Financial firms are led by *financial entrepreneurs* in the sense of Frank Knight (1921), i.e. by people who can deal with the consequences of unforeseen events. They prided themselves as inventors or first users of complex, headache-causing, difficult to enforce *financial innovations*

"such as securitized bank loans, collateralized debt obligations (CDOs) or credit default swaps (CDSs). As any novelty, financial innovations are not necessarily beneficial. Thus, the introduction of unregulated CDOs and CDSs led to a remarkable increase in opportunism (moral hazard) among their originators and traders,<sup>52</sup> which contributed to the extent of the 2008 crisis and resulted in the enormous complexity of their liability structure" (Richter 2015, 106).<sup>53</sup>

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<sup>49</sup> See Richter (2009). Collective goods may be public or private. A private collective good would be a club good in case of a closed market or a private public good in case of an open market – similar to Coase's (1974) lighthouse example. The decline of the provision of privately ordered public goods may be the result of badly governed principal-agent contracts between today's capital owners and their agents (their "salaried executives and their salaried managers and sub-managers"). Schumpeter speaks in this context of the erosion of ownership interests (1942, 141). It is tempting to illustrate the wealth-destroying consequences of such an employee-run capitalism by the fallout of the financial crisis of 2008.

<sup>50</sup> "... an opaque web of interconnected obligations" (Brunnermeier 2009, 98) is far removed from Eucken's constituent principle of liability.

<sup>51</sup> Arrow puts the problem as follows: "What we observe is that the failure of the price system to handle risk-bearing adequately leads to a diminished use of prices even in contexts where they would be most useful in bringing about a careful and flexible confrontation of needs and resources" (1970, 141).

<sup>52</sup> See Wagner (2009).

<sup>53</sup> See Scott (2009) who describes the complexity of CDOs and adds: "About 80% of the 2.5 trillion subprime mortgages made since 2000 went into securitization pools." By way of illustration he adds an example of a CDO<sup>2</sup> created by a large bank in 2005. "It had 173 investments in tranches issued by other pools [...] It issued 975 million of four AAA tranches, and three subordinate tranches of \$55 million. [...] Two of the 173 investments [...] were tranches from another billion-dollar CDO [...], which was com-

## 7. Concluding Remarks

The debate on Keynes glossed over his intention to replace classical economic theory by an approach considering the fact of uncertainty in the sense of insurmountable limited foresight. He tried to overcome this problem by introducing behavioral assumptions on consumption, investment, and cash management. He enriched economics by revitalizing the circular flow concept and by his suggestion to think in simple aggregates that also helped to develop national and financial accounting. However, the “New Neoclassical Synthesis” that evolved from Keynes’s *General Theory* keeps within the limits of neoclassical economics and is closely linked to Newton’s celestial mechanics (Richter 2015, chapter 10). Its micro-foundations of macroeconomics clearly contradicts Keynes’s intentions. Given uncertainty in the sense of this article, Keynesians have not much choice but to accept the older social control style of David Hume, also applied by the representatives of German *Ordnungstheorie* or the New Institutional Economics. As for stabilizing financial markets, rejecting, for instance, legal protection of liability-blurring contracts may be more effective than public regulation. In any case, there are more intelligent measures to stabilize an economy than “socialization of investment” or “big government” – and there are no reasons for Keynesians to turn their backs on German *Ordnungstheorie*.<sup>54</sup>

## References

- Acemoglu, D. and J. Robinson. 2013. *Why Nations Fail*. Croidon: CPI Group (UK).
- Akerlof, G. 1970. “The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism.” *Quarterly Journal of Economics* 84: 488–500.
- Albert, H. 1978. *Traktat über rationale Praxis*. Tübingen: Mohr Siebeck.
- Anon. 2015a. “The Reluctant Hegemon. A Special Report on Germany.” *The Economist*, June 15.

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posed mainly of 155 MBS tranches and 40 CDOs. Two of these 155 MBS tranches were from a 1 billion RMBS pool created in 2004 [...] composed of almost 9000 mortgage loans (90% subprime) [...],” etc. Scott concludes: “With so much complexity, and uncertainty about future performance, it is not surprising that the securities are difficult to price and that trading dried up.”

<sup>54</sup> Thus, e.g., the *Times Literary Supplement* reviewer of the English translation of Eucken (1950) concluded that no one in England had anything to learn from Eucken and that his book “completely falls to the ground for use at British universities” (cited in Hutchison 1979, 439). Hutchison adds: “Obviously, the ideas that were helping to provide the theoretical foundations for the German Social Market Economy had nothing to contribute, as far as English economists were concerned, to any problems which their economy might have to face.”

- Anon. 2015b. “Fresh Thoughts.” Book Review of *Between Debt and the Devil: Money, Credit, and Fixing Global Finance*, by A. Turner. *The Economist*, November 14, 75.
- Anon. 2016. “Nightmare on Mainstreet.” *The Economist*, August 20, 10.
- Arrow, K. 1953. “Le rôle des valeurs boursières pour la répartition la meilleures des risques.” In Centre National de la Recherche Scientifique, *Econométrie*. Paris: 41–48.
- 1970. *Essays in the Theory of Risk Bearing*. Amsterdam and London: North-Holland.
- Baumol, W. 1959. *Economic Dynamics: An Introduction*. 2<sup>nd</sup> ed. New York: Macmillan.
- Benassy, J. 1975. “Neo-Keynesian Disequilibrium Theory in a Monetary Economy.” *Review of Economic Studies* 42: 502–523.
- Brayton, F., E. Mauskopf, D. Reifschneider, P. Tinsley, and J. Williams. 1997. “The Role of Expectations in the FRB/US Macroeconomic Model.” *Federal Reserve Bulletin*, April 1997: 227–245.
- Brunnermeier, M. K. 2009. “Deciphering the Liquidity and Credit Crunch 2007–2008.” *Journal of Economic Perspectives* 23: 77–100.
- Burmeister, E. and A. R. Dobell. 1970. *Mathematical Theory of Economic Growth*. London: Macmillan.
- Calvo, G. A. 1983. “Staggered Prices in a Utility Maximizing Framework.” *Journal of Monetary Economics* 12: 383–398.
- Clower, R. W. 1965. “The Keynesian Counterrevolution: A Theoretical Appraisal.” In *The Theory of Interest Rates*, edited by F. H. Hahn and F. P. R. Brechling, 103–125. London: Macmillan.
- Coase, R. H. 1937. “The Nature of the Firm.” *Economica* 4: 386–405.
- Coddington, A. 1976. “Keynesian Economics: The Search for First Principles.” *Journal of Economic Literature* 14: 1258–1273.
- Cohen, L. 1959. “An Empirical Measurement of Built-in Flexibility of the Individual Income Tax.” *American Economic Review, Papers & Proceedings* 49: 315–335.
- Davidson, P. 1991. “Is Probability Theory Relevant for Uncertainty? A Post Keynesian Perspective.” *Journal of Economic Perspectives* 5 (Winter): 129–143.
- Ebel, J. 1981 [1973]. “Geld- und Fiskalpolitik in der Praxis: Ein Beispiel aus der Bundesrepublik.” In *Makroökonomik: Eine Einführung*, edited by R. Richter, U. Schlieper and W. Friedmann, 612–647. 4<sup>th</sup> ed. Berlin: Springer.
- Eucken, W. 1947. *Die Grundlagen der Nationalökonomie*. 5th rev. ed. Godesberg: Helmut Kupper.
- 1950. *The Foundations of Economics: History and Theory in the Analysis of Economic Analysis*. Translated by T. W. Hutchison. London et al.: William Hodge.
- 1951. *Unser Zeitalter der Mißerfolge: Fünf Vorträge zur Wirtschaftspolitik*. Tübingen: Mohr-Siebeck.
- 1952a. *Grundsätze der Wirtschaftspolitik*. Tübingen: J.C.B. Mohr (Paul Siebeck).

- 1952b. *This Unsuccessful Age or The Pains of Economic Progress*. New York: Oxford University Press.
- “Financial Crisis Inquiry Report.” 2011. *Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*. Authorized Edition. New York: Public Affairs.
- Föhl, C. 1955. *Geldschöpfung und Wirtschaftskreislauf*. 2<sup>nd</sup> ed. Berlin: Duncker & Humblot.
- Furubotn, E. G. and R. Richter. 2005. *Institutions and Economic Theory: The Contribution of the New Institutional Economics*. 2<sup>nd</sup> ed. Ann Arbor: The University of Michigan Press.
- Goodfriend, M. and R. G. King. 1997. “The New Neoclassical Synthesis and the Role of Monetary Policy.” In *NBER Macroeconomic Annual 1997*, edited by B. Bernanke and J. Rotemberg, 231 – 296. Vol. 12. Cambridge, MA: MIT Press.
- Grandmont, J. M. 1977. “Temporary General Equilibrium Theory.” *Econometrica* 45: 535–72.
- Hagemann, H. 2015. “The German Edition of Keynes’s General Theory: Controversies on the Preface.” In *Research in the History of Economic Thought and Methodology*, edited by Luca Fiorito, 159–166. Vol. 32 of *A Research Annual*, edited by Luca Fiorito, Scott Scheall and Carlos Eduardo Suprinyak.
- Hayek, F. A. 1944. *The Road to Serfdom*. London: Routledge.
- 1945. “The Use of Knowledge in Society.” *American Economic Review* 35: 519–530.
- Hellwig, M. 2008. “Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis.” Preprints of the Max Planck Institute for Research on Collective Goods. Accessed 12 September 2016. [https://www.coll.mpg.de/pdf\\_dat/2008\\_43online.pdf](https://www.coll.mpg.de/pdf_dat/2008_43online.pdf).
- Hicks, J. R. (1936), “Mr. Keynes Theory of Unemployment.” *Economic Journal* 46: 238–253.
- 1937. “Mr. Keynes and the ‘Classics:’ A Suggested Interpretation.” *Econometrica* 5: 147–159.
- 1946. *Value and Capital*. 2<sup>nd</sup> ed. Oxford: Clarendon.
- Hutchison, T. W. 1979. “Notes on the Effects of Economic Ideas on Policy: the Example of the German Social Market Economy.” *Zeitschrift für die gesamte Staatswissenschaft* 135: 426–441.
- 1980. *The Limitations of General Theories*. Washington, DC: American Enterprise Institute for Public Policy Research.
- Keynes, J. M. 1923. *A Tract on Monetary Reform*. London: Macmillan.
- 1973 [1936]. *The General Theory of Employment, Interest and Money*. Reprinted in Vol. VII of *J.M. Keynes Collected Writings*. London: MacMillan.

- 1973 [1937]. “The Theory of the Rate of Interest.” In: *The Lessons from Monetary Experience: Essays in Honour of Irving Fisher*. Reprinted in Vol. XIV of *J. M. Keynes Collected Writings*, 101–108. London: Macmillan.
- 1973 [1940]. “Comment.” *Economic Journal* 50 (197): 154–156. Reprinted in Vol. XIV of *J. M. Keynes Collected Writings*, 318–320. London: Macmillan.
- Klein, L. R. and A. S. Goldberger. 1955. *An Econometric Model of the United States 1929 – 1952*. Amsterdam: North-Holland.
- Krugman, P. 2014. “Why aren’t the Alarm Bells Ringing?” Review of *The Shifts and the Shocks. What We’ve Learned – and Have Still to Learn – From the Financial Crisis*, by M. Wolf. *The New York Times Review of Books*, October 23.
- Lange, O. 1942. “Say’s Law: A Restatement and Criticism.” In: *Studies in Mathematical Economics and Econometrics*, edited by O. Lange et al., 49–68. Chicago: University of Chicago Press.
- Leijonhufvud, A. 1968. *On Keynesian Economics and the Economics of Keynes: A Study in Monetary Theory*. New York: Oxford University Press.
- 2009. “Out of the corridor: Keynes and the crisis.” *Cambridge Journal of Economics* 33: 741–757.
- Lucas, R. E. Jr. 2003. “Macroeconomic Priorities.” Presidential Address delivered at the 115<sup>th</sup> meeting of the American Economic Association. *American Economic Review* 93 (1): 1–14.
- Luhmann, N. 1997. *Die Gesellschaft der Gesellschaft*. Frankfurt: M.: Suhrkamp.
- Malinvaud, E. 1977. *The Theory of Unemployment Reconsidered*. Oxford: Basil Blackwell.
- McCloskey, D. 1983. “The Rhetoric of Economics.” *Journal of Economic Literature* 21: 481–517.
- Minsky, H. P. 1986. *Stabilizing an Unstable Economy*. New York: McGraw-Hill.
- 1996. “Uncertainty and the Institutional Structure of Capitalist Economies.” *Journal of Economic Issues* 30 (2): 357–370.
- Muth, J. F. 1961. “Rational Expectations and the Theory of Price Movements.” *Econometrica* 29: 315–335.
- North, D. C. 1990. *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press.
- 2005. *Understanding the Process of Economic Change*. Princeton and Oxford: Princeton University Press.
- Olson, M. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge: Harvard University Press.
- Patinkin, D. 1965. *Money, Interest, and Prices: An Integration of Monetary and Value Theory*. 2<sup>nd</sup> ed. New York: Harper.
- Richter, R., ed. 1979. “Symposium: Currency and Economic Reform: West Germany after World War II.” *Zeitschrift für die gesamte Staatswissenschaft* 135: 297–532.

- 2009. “Who Listened? Unappreciated Teachings of New Institutional Economics Related to Financial Crisis 2008.” *Kredit und Kapital* 42: 473–486.
- 2012. “German ‘Ordnungstheorie:’ From the Perspective of the New Institutional Economics.” *Schmollers Jahrbuch – Journal of Applied Social Science Studies* 132: 473–500.
- 2014. “Efficiency of Institutions From the Perspective of New Institutional Economics With Emphasis on Knightian Uncertainty.” In *Festschrift zu Ehren von Christian Kirchner: Recht im ökonomischen Kontext*, edited by W. A. Kaal, M. Schmidt and A. Schwartze, 1277–1300. Tübingen: Mohr Siebeck.
- 2015. *Essays on New Institutional Economics*. Heidelberg et al.: Springer.
- Richter, R., U. Schlieper, and W. Friedmann. 1981. *Makroökonomik: Eine Einführung*. 4<sup>th</sup> ed. Berlin et al.: Springer.
- Richter, R. and R. Selten. 1963. “Dynamische Theorie der Built-In Flexibility.” *Zeitschrift für die gesamte Staatswissenschaft* 119: 565–578.
- Romer, D. 1993. “The New Keynesian Synthesis.” *Journal of Economic Perspectives* 7 (Winter): 5–22.
- Samuelson, P. A. 1946. “Lord Keynes and the General Theory.” *Econometrica* 14: 187–200.
- 1947. *Foundations of Economic Analysis*. Cambridge, MA: Harvard University Press.
- 1967. *Economics: An Introductory Analysis*. 7<sup>th</sup> ed. New York: McGraw-Hill.
- Sargent, T. 1995. *Bounded Rationality in Macroeconomics*. Oxford: Clarendon Press.
- Schumpeter, J. 1942. *Capitalism, Socialism and Democracy*. New York: Harper.
- Scott, K. E. 2009. “Why toxic assets are so hard to clean up.” *The Wall Street Journal*, July 30, A 13.
- Scott, K. E., T. H. Jackson, and J. B. Taylor, eds. 2015. “*Making Failure Feasible: How Bankruptcy Reform Can End ‘Too Big to Fail.’*” Stanford, CA: Hoover Institution.
- Smith, A. 1937 [1776]. *An Inquiry Into the Nature and Causes of the Wealth of Nations*. Edited by Edwin Cannan. New York: Modern Library.
- Taylor, L. 2010. *Maynard’s Revenge: The Collapse of Free Market Economics*. Cambridge, MA: Harvard University Press.
- Tinbergen, J. 1939. *Statistical Testing of Business Cycle Theories, Part II: Business Cycles in The United States of America 1919 – 1932*. New York: Agaton Press.
- Wagner, G. 2009. “Falsche Anreize.” *Handelsblatt*, 24 August, 16.
- Wallison, P. J. 2009. “The True Origins of This Financial Crisis as opposed to a desperate liberal legend.” *The American Spectator*, February.
- 2015. *Hidden in Plain Sight: What Really Caused the World’s Worst Financial Crisis and Why it Could Happen Again*. New York and London: Encounter Books.
- Walsh, C. E. 2003. *Monetary Theory and Policy*. 2<sup>nd</sup> ed. Cambridge, MA: MIT Press.

- Williamson, O. E. 1985. *The Economic Institutions of Capitalism*. New York: Free Press.
- Wolf, M. 2014. *The Shifts and the Shocks: What We've Learned – and Have Still to Learn – From the Financial Crisis*. New York: Penguin Press.