

Hirsch, Roni

Working Paper

Uncertainty and the limits of markets

CHOPE Working Paper, No. 2020-08

Provided in Cooperation with:

Center for the History of Political Economy at Duke University

Suggested Citation: Hirsch, Roni (2020) : Uncertainty and the limits of markets, CHOPE Working Paper, No. 2020-08, Duke University, Center for the History of Political Economy (CHOPE), Durham, NC

This Version is available at:

<https://hdl.handle.net/10419/222319>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

UNCERTAINTY AND THE LIMITS OF MARKETS

BY RONI HIRSCH

CHOPE Working Paper No. 2020-08

June 2020



Uncertainty and the Limits of Markets

Roni Hirsch, Harvard University
ronihirsch@fas.harvard.edu

Abstract: The article considers the place of the neoclassical equilibrium model as the basis for current views of markets as fair, efficient, or both. It also points to three threats the model poses for democracy and justice: it ignores the problem of inequality, it suppresses the socio-economic significance of uncertainty, and it conceals its own tradeoff between certainty and equality. Instead, the article lays out Frank Knight's critical assessment of real markets, which rely on the tacit agreement between a handful of "daring" entrepreneurs and the "risk-averse" masses to bear the uncertainties of business-life in return for a substantially larger share of its direction and rewards. Knight's influential conclusion, that this agreement mandates a nonmeritocratic social inequality and substantively divides humanity into leaders and followers, should be critically examined.

Markets, in the contemporary normative imagination, are a unique kind of largescale social institution. Perceived as a coordination tool, rather than a direct instrument of policy, they can guarantee individual liberties and increase individual welfare, bypassing the need for a comprehensive top-down plan or justificatory ethical doctrine. Markets epitomize decentralized, pluralist modes of governance and collaboration by helping members of society freely pursue their own "utility" or "preferences" (see, e.g., Satz 2012; Okun 2015). In this article, I show that this consistent set of assumptions—found in various current debates on the limits of markets, their liberal virtues, and their implications for social justice—is rooted in the undertheorized embrace of the neoclassical "equilibrium" model of markets.

The idea of perfectly competitive markets finding equilibrium at a welfare-optimizing price radically transformed the science of economics in the late-nineteenth century. It was premised on the deliberate bracketing of key factors of economic life, previously at the core of economic inquiry: the role of market exchange in the economic development of society and, even more

importantly, its distributive outcomes. In what follows, I argue that the perfect markets model, decontextualized and even naturalized in normative theory and increasingly in public opinion, poses two major threats to democracy and social justice: it ignores the problem of inequality and it suppresses the socio-economic significance of uncertainty. Put differently: neoclassical economics, as Frank Knight first showed in his seminal book, *Risk, Uncertainty, and Profit* (2012 [1921]), relies on a tacit tradeoff between certainty and equality.

Drawing on Knight's account, I explore the theory that markets can help eliminate uncertainty for the many by transferring it to a handful of risk takers, who also assume a greater share of economic control and financial gains. By this logic, to achieve greater certainty and security for its members, society should accept a less egalitarian and inherently hierarchical social structure. Understanding this logic, its mechanics and justifications, is therefore crucial for addressing not only the ideal of markets but some of the more pressing political dilemmas around them: the rapid expansion of the financial sector and the intensified privatization and commodification of noneconomic aspects of human life.¹

¹ Though an extensive literature now exists on late-twentieth-century financialization, defined as the unprecedented expansion of financial techniques and institutions (see, e.g. Krippner 2011; Epstein 2005), far less has been written on the political and normative theory of finance (but see Herzog 2017; Boatright 2011; Meyer 2018). At least part of the current normative concern can be traced back to the "neoliberal" transformation of society, defined as the extension of markets into new spheres (Brown 2015; Foucault 2008) and the threat of excessive commodification and privatization (Radin 1987; Anderson 1995; Knight and Schwartzberg 2019).

Knight, an American economist based in Iowa and later in Chicago, belonged to the neoclassical tradition. Well-known as a professor of modern “price theory,” his students included the future leaders of the neoliberal Chicago School of economics.² Nonetheless, the third part of his famous book was dedicated to exploring the limits of the perfect-markets model it had so meticulously laid out in previous sections. Two components in particular, Knight argued, were missing from the highly static, mechanistic neoclassical ideal: human agency and the impact of time and change on the operation of markets. Knight responded to both by offering a theory of the entrepreneur as an “uncertainty bearer.” The Knightian entrepreneur takes on society’s irreducible risks in return for profits: the residual, potentially limitless earnings (or losses) left after all contracts with labor and capital have been fulfilled.

The Knightian entrepreneur is, in contemporary parlance, a “market maker:” she allows for markets in labor, capital, and commodities to emerge in the first place, by offering predetermined wages and interest-payments in return for sporadic and uncertain, if potentially very large sums.³

² The University of Chicago’s Economics department in the 1920s and 30s was renowned for its free-market advocacy in an age of progressive interventionism and for its emphasis on mathematical rigor, in contrast with historicist and empiricist methods (Burgin 2013; Backhouse, Bateman, and Medema 2010; van Horn and Mirowski 2009). Though Knight, along with Jacob Viner, taught Chicago’s famous introduction to price theory, questions remain as to the extent of their personal influence on the ideological role the theory assumed in later years (Emmett 2013, 147-49; Medema 2013, 162).

³ “Market makers” are persons or institutions that allow a market to exist by guaranteeing a steady supply of orders to buy and sell in return for speculative profits. Since the 1960s, the term

Knight further argues that the markets set up through this foundational “trade” free society to fully utilize its powers and capacities, unencumbered by crippling fears over a dynamic and uncertain production process. Writing in the early-twentieth century, Knight was not unique in his focus on the entrepreneur. He was, however, a lone voice in speaking of the entrepreneurial function as a condition for the possibility of markets, anchoring what had become a highly abstract concept in a set of social and existential concerns.⁴

In the next section, I discuss the normative and historical contexts of the Knightian framework and its contemporary relevance. The following three sections follow Knight’s layered critique of the “perfect markets” ideal, as he reintroduces time, distribution, uncertainty, and human judgement into the mechanized world of abstract economic theory. The final section elaborates the Knightian tradeoff between certainty and equality through his concept of profit. I conclude with a discussion of Knight’s important insights on the costs of the “perfect markets”

is used officially, primarily in financial markets, to designate “any dealer who, with respect to a security, holds himself out... as being willing to buy and sell such security for his own account on a regular or continuous basis” (U.S. Congress 1975). Though the term, therefore, postdates Knight, it nonetheless owes its anthropological, structural, and normative premises, I propose, to his early-twentieth-century exploration of the entrepreneur and her profits.

⁴ The financial system today reproduces Knight’s idea about the risk-management function of markets. While this question exceeds the scope of my argument here, I point the reader to Ivan Ascher’s (2016) book on finance as a system of hedging (pp. 41-45); to Perry Mehrling’s (2010a, 2010b) work on risk in asset pricing and on dealers as market-makers; and to William Sharpe’s (1964) and Kenneth Arrow’s (1964) foundational articles.

ideal, the role of human agency in setting up markets, and the meaning of the deal between uncertainty-bearers and society.

Perfect Markets

Even as the crisis of mounting inequality returns to the main stage of social science and theory (see, e.g., O'Neill 2017; Boushey, De Long, and Steinbaum 2017), capitalist markets retain many of their purported virtues in the contemporary normative imagination. At least in their ideal form, they are often imagined as an extension of our most fundamental rights to freedom and autonomy (Tomasi 2012; Taylor 2013; Hirschman 1970; Dagan 2017), touted as a minimally invasive, highly efficient system of social coordination (Okun 2015; Dworkin 2000; Hayek 1937), or celebrated as a force against discrimination (Becker 1971). Markets are also consistently expected, sometimes assumed, to produce fair and just outcomes and to reward each economic actor for her relative contribution (for an extended critique of this view, see Heath 2018, 3-4). Though not all markets are deemed equally apt to serve these tasks (Satz 2012; Sandel 2013; Anderson 1995; Radin 1987), liberal critics of markets tend to reinforce at least some of these assumptions, precisely by expecting markets to live up to their promise of human betterment.

What liberal critics and market advocates alike tend to leave intact, often unquestioned, is the model of the market itself. Markets, in this view, allocate goods and other resources under conditions of perfect competition. They do so efficiently if they have managed to clear all supplies and demands using only the internal adjustments of the price mechanism and to optimize individual utility. From a normative perspective, markets are also typically portrayed as

a collection of voluntary, bilateral agreements between (property owning) individuals of equal standing.⁵

The mechanical model behind this specific market idealization, as historians have shown, belongs to a transformative moment in the history of the economics discipline in the late-nineteenth century. Its unique abstractions were a sharp departure from the more dynamic and deeply anthropological classical “labor theory of value” and its normative and political commitment to collective flourishing. The new, “marginalist” mode of economic thinking was modeled on modern physics, and especially energetics: markets reconceived as systems of forces seeking and finding equilibrium (Ingrao and Israel 1990; Jaffé 1976; Weintraub 2002).

Though ostensibly removed from the social analysis of their predecessors, the normative stakes of the new model were soon made apparent. John Bates Clark’s idea of marginal contribution (whereby markets reward individuals according to their input) or the idea of “Pareto efficiency” (that markets will find balance at a point at which no one could be made better off without harm to others) conveyed a new promise to produce fairness and individual optimization without the intervention of coercive government measures (Satz 2012; Heath 2018). Though this set of broader ideals has drawn regular criticism (see, e.g., Robinson 1969), it has survived largely intact for over a century and across geographical divides.

⁵ Despite the dominant notion that markets are an extension of modern contracts (Kreitner 2019), and that contracts are a mutual form of social collaboration (Ripstein 2009), there are also important voices to the contrary. On liberalism’s founding contracts as steeply asymmetrical, see Pateman 1988; Mills 1997. On the hierarchies that shape the institutional and legal structure of financial markets, see Pistor 2013; Mehrling 2010b.

Frank Knight's work in the 1910s and 1920s offers an early and pervasive critique of this model. It focuses on the limits of markets' ability to efficiently allocate resources; limits that, he claimed, were rooted in human character and epistemology. As I will show, Knight's focus on uncertainty as the most important limit on the ideal of perfect markets, meant a broad redefinition of markets as systems for the distribution not only of resources but of responsibility, control, and exposure to danger. Knight placed markets at the center of the social distribution of power, as well as freedom, in the specific sense he gave it, of the power to act (RUP, 351). He was, of course, no Marxist. Knight's critique of the neoclassical market model was an internal critique, from an avowedly liberal perspective. It focused on three main areas: Knight's rejection of market meritocracy, his aversion to behaviorism and other materialist reductions, and his warnings against the actual mechanization of life and the disappearance of more meaningful spheres of human action.

Concerning meritocracy, Knight rejected many of the higher aims ascribed to markets, such as providing just rewards or fair distributive outcomes. Though his theory of the entrepreneur is highly individualistic, this social function can be fulfilled by anyone who is motivated, by a combination of character, circumstance, and the right reward, to assume a significant amount of uncertainty. By rejecting meritocratic justifications of markets and especially of profits—markets' residual, unpredictable returns—Knight's theory parts ways not only with classical and neoclassical views of markets, but even with those of their prominent critics.

Both the neoclassical "marginalist" theory of distribution and the classical "labor theory of value" shared a basic intuition that profits, wages, and other returns from capital are earned and merited. Until the early-twentieth century, with the important exceptions of Marx, Henry George, and other critics, wages were generally assumed to track the actual work done by labor,

and profits were assumed to be limited by the relative shares of labor and landowners. The entrepreneur's input constituted a measured contribution for which profits were a return. It is in this context that we must understand Adam Smith's "master of industry" as rightfully earning her profits by enduring the "risk and trouble" of putting labor to work (Smith [1776] 1976, 69), or Weber's puritan business-person, who earned her profits through a combination of abstinence and industriousness (Weber [1905] 1992, 116). Though ostensibly committed to greater value-neutrality, marginalist proponents of perfect markets generally followed the path laid by Clark. "Where natural laws have their way," Clark argued, "free competition tends to give to labor what labor creates, to capitalists what capital creates, and to entrepreneurs what the coordinating function creates" (Clark 1902, 3). It is this idea, of a return equal to one's contribution that has dominated meritocratic views of markets ever since (Persky 2000; Cook 2018).

What is perhaps more surprising, is that Knight's contemporaries, most notably Joseph Schumpeter, who criticized this meritocratic model, tended to reproduce its assumptions in their own theories of the entrepreneur. Schumpeter, for example, described the entrepreneur as a unique individual, with the power to rise above the mundane, habitual nature of bourgeois life and set in motion entirely new businesses. "In all spheres of social life," he wrote,

we observe the distinction between leaders and those that are led, a distinction that *in the end* rests on differences in individual competencies... Intellectual characteristics... are only of secondary importance; strength of will is, however, of primary importance. (Schumpeter [1928] 2011, 241-42)

Unlike for Schumpeter, let alone Clark, Knight's entrepreneurs, as I will show, are not necessarily "competent" and don't need to show extraordinary "strength of will." Profits in his view are not earned at all but won, often in haphazard contexts driven primarily by overconfidence.

In addition, Knight's critique of the perfect-markets ideal was driven by existential and epistemological concerns. As readers have amply shown, Knight's critique of the neoclassical model formed part of a larger program attacking the positivist reduction of scientific knowledge to observed patterns, and the new Progressive ambition to apply social science as a form of social control (Emmett 2013, 65; Hammond 1991; Hands 2006). In all three cases, marginalism, positivism, and Progressivism, Knight had focused on the threat these ways of thinking posed for democracy and for the distinctness of the ethical and aesthetic realms of life.

For Knight, the neoclassical model accurately describes life's mechanical aspects. It provides an automated image of society, where human choices and plans are reduced to instincts and whims (RUP, 59). The quintessential foundation of such markets, for Knight, was the absence of uncertainty and with it the absence of occasions for deliberation and judgment (RUP, 94). If, Knight continued, the ultimate condition for perfect markets is general omniscience, actual markets are therefore defined by the limits of human knowledge and communication. It is in the presence of uncertainty that material life regains its complexity and human experience its reflective, deliberative mode.

To conclude, Knight framed his critique of the perfect-markets model as a theory of uncertainty and the profits of the entrepreneur; three key components of business life left out of neoclassical models. The idea of an automated, unguided equilibrium of autonomous forces eclipsed questions of enterprise, direction, and subjection. All three elements—profits, uncertainty, and the entrepreneur—found expression in the market-making function: a formative “deal” between profit-makers and everyone else. In the following sections, I trace the ways the deal Knight had identified split up society into two fundamental, hierarchically related groups: leaders and followers, the responsible directors who control economic life, and those who are

led, directed, and controlled. With this social differentiation he further posited a tacit social agreement to unevenly divide the proceeds of social collaboration. The profit-driven system, as set up by Knight, is one in which a wide consensus exists around inequality as the necessary cost of uncertainty. Knight's continued, even heightened, relevance for the present moment, I argue, stems from the unacknowledged fact that our own world has largely accepted this premise but has yet to properly engage it politically and ethically.

Doing

"History," wrote Knight, "is largely the story of progressive organization and its changes in form" (RUP 55). "In organized activity," he continues, "individuals perform different tasks, and each enjoys the fruits of the labor of others" (ibid.). Perfect competition is the recurring tool with which that organization is supposed to be generated, unguided and unplanned, by the market itself. Competition thus stands as a single mechanism meant to solve two allocative problems: "the assignment of tasks and the apportionment of rewards" (55). The solution, in turn, is both individualistic and automatic: self-interest drives individuals to pursue the greatest returns for their effort and sacrifice, and to rationally barter to fulfil their needs. This mutual tendency is grounded in the reduction of humanity to calculating, perfectly rational creatures, dominated by a means-ends logic (56). This idealized model of markets, Knight added, leaves no room for profit:

The primary attribute of competition, universally recognized and evident at a glance, is the "tendency" to eliminate profit or loss, and bring the value of economic goods to equality with their cost... the tendency is toward a remainderless distribution of products among the agencies contributing to their production. (RUP, 18-9)

Efficient markets, defined as the perfect balance of cost and gain, mean that when market transacting is through, the rewards from production have been fully allocated among all participants, remainder-free.

By making them explicit, Knight's model economy brought to light, in some cases to absurdity, the ruling assumptions of marginalist price theory. By the 1910s, as Knight was completing the dissertation project that would become *Risk, Uncertainty, and Profit*, marginalism already enjoyed a degree of intellectual sway, along with the special authority that came with the mechanical models it borrowed from physics (Mirowski 1984). As historians have noted, marginalists' focus on the scene of exchange as the center of economic life meant a drastic narrowing of the normative scope of economic analysis (Winch 1972, 335). The former, "classical" focus on production, population, and the division of the surplus fruit of labor (Aspromourgos 2005, 22-24), was now replaced with the mechanized interaction of utility maximizing human atoms, moved by the force of their desires and coming to rest in a state of equilibrium, when all desires have been satisfied. The problem of the social distribution of surplus had given way to the problem of choice and allocation of scarce resources.

Knight's work should be understood as a reflection on this limitation of the field of economic study. Of all the necessary abstractions that produced the "perfect market," where an equilibrium of forces is possible, Knight highlighted the significance of one specific demand, that

the members of the society act with complete 'rationality.' By this we do not mean that they are to be 'as angels, knowing good from evil'... but they are supposed to 'know what they want' and to seek it 'intelligently'... all their acts take place in response to real, conscious, and stable and consistent motives, dispositions, or desires; nothing is capricious or experimental, everything deliberate. (RUP 77-8)

Individuals acting within this economy enjoy costless, instantaneous exchange, complete freedom, and perfect communication, which mean that "every potential buyer of a good

constantly knows and chooses among the offers of all potential sellers” and “every person is the final and absolute judge of his own welfare and interests” (77-9).⁶

The irony of this hyper-rational, sovereign omniscience is that it is premised on decision-making but effaces the true meaning of individual choice—a tension that will shape Knight’s depiction of the entrepreneur. From its “point of view of the gods” (Knight 1925b, 423), the theory defines the system of exchange through the principle of the conservation of value, analogous to the principle of energy-conservation, retaining its quantity while shifting forms. “Value acquired” in the act of exchange is always identical to “value given,” while in the system as a whole, value “flows” from producers to consumers. It is a perpetual energetic cycle, from potential value (stored in wealth or labor power, but also desire and other motive-forces) to value in its “kinetic” state (income, consumption, gratification), moving like an electric current (*ibid.*, 424). It is therefore highly significant that the single condition which allows value to retain this flawless convertibility is perfect knowledge and communication.

Perfect information, in Knight’s vivid description, would work its way through the economic system not merely as an external reference point for individuals, but by actually transforming human nature, imprinting its rational imperatives onto people’s minds. Perfect markets, in other words, were they to exist, would mean a substantial limitation of human judgment:

The constant presence of the published scale of exchange ratios and the working-out of the whole organization in terms of it must have a tremendous influence in ‘rationalizing’ the economic activity, in impressing its quantitative features on men’s minds, and enforcing precise calculations and comparisons. (RUP 88)

⁶ On the implicit assumption of perfect knowledge and the infallibility of expectations in the history of economic thought, see Hutchison 1953, 223-26.

For fully rationalized market actors, decisions are limited to comparing quantities of an abstracted “value in exchange,” which they either create or expend (89). The decision to undertake a certain line of production, work for a given wage, or trade at a given rate of exchange, all stem automatically from the perfect knowledge of present and future prices and even present and future needs. In other words, decisions on the margin determine all prices, but the theory abstracts away that which makes a decision a decision: judgment, uncertainty, and loss.

Doing and Time

When Knight was writing, in the 1920s, time and change posed the greatest challenges to equilibrium analysis, which relied on highly static assumptions about economic life. Economic conditions in this model were assumed to be fixed and unchanging; one of the reasons perfect knowledge was even remotely possible as an assumption (Walras 1954, 84; Ingrao and Israel 1990, 103-5). Profit, which found little place within the perfect-markets model, reemerged as an important framework for dealing with the dynamic reality beyond the model, and, for Knight, with its most important outcomes: uncertainty and the uneven distribution of economic surplus.

Knight’s work should be understood within the context of the largely American “risk theory of profit,” developed by his immediate predecessors F. B. Hawley, Clark, and A. H. Willett. Despite their differences, all three agreed on the basic definition of profits as a residual form of income that was not, and could not, be determined exclusively by market mechanisms. As a residual income, profits (and losses) accounted for all that perfect markets did not: technological innovation, population growth, natural disasters, etc. (Hopkins 1933; Clark 1902). Profits were there to be had for economic actors who would assume the risks posed by the system’s inherent

dynamism. “Business,” as Clark argued, “repays men, not only for their labors, but for their fears” (Clark 1892, 40).

It is therefore important to note that time enters Knight’s system before profit is ever invoked. For Knight, many of the risks his predecessors associated with the system’s residual returns could be managed and controlled by markets themselves, thanks to advances in risk-mitigating technologies like insurance and incorporation. The effects of time, he argued, did not prevent the balancing of supply and demand, as long as they were amenable to probabilistic calculation. By pooling together and properly distinguishing categories of cases and outcomes, insurers could offer a fixed and predetermined rate for future hazards, making not only change but its related risks a matter for automated economic choice, a risk/benefit calculus. Markets, Knight claimed, would translate probable future losses into present prices by widely applying the “insurance principle” (213). But it was precisely for this reason that the insurer was not, for Knight, a profit-maker. In a perfect market, an insurer would make no profit, only a predetermined fee. In a world where all future losses were amenable to probabilistic calculus, there would be no residual returns at all (247).

Knight’s adaptation of the equilibrium model to the demands of business dynamism using insurance principles was a sign of the times. Insurance, as Knight himself noted, had reached an all-encompassing, at times eccentric scope, “as when Lloyd’s insures the business interests concerned that a royal coronation will take place as scheduled, or guarantees the weather in some place having no records to base calculations upon” (RUP, 250). Like other American economists in this period, Knight’s work also extended the actuarial logic to the modern corporation. Corporate mergers on an unprecedented scale were a very prominent fact of American business

in the early-twentieth century.⁷ These, argued economists and corporate elites, should be understood as a form of largescale consolidation of risks and their socialization through redistribution.⁸ Knight's dynamic equilibrium model adopted in full the extension of insurance to the corporation: centralized management, he claimed, would help minimize the risk of bad decisions (since errors would cancel each other out through sheer volume), while public ownership of stocks would disperse investment risks (RUP, 252-4).

So how did Knight's idea of risk reflect back on his idea of profit? By making risk a matter of equilibrium, Knight delineated a separate, unique jurisdiction for the problem of profit. His adaptation of the insurance principle to the perfect markets model showed that the problem with time was not that it undermined the assumptions of perfect markets. Rather, the problem was that it created a category of "risk" about which economic actors were ignorant by definition. Not

⁷ The turn-of-the-twentieth century was defined by political battles over the "trust problem," framed by the Sherman Antitrust Act of 1890 and the establishment of the Federal Trade Commission in 1914 (Sanders 1999, 267; Sklar 1988, 91). The Sherman Act represented a strong, if nominal, prohibition on business collusion in the name of free and open competition, propelled by populist sentiment against the backdrop of an intense period of horizontal and vertical corporate consolidation (Lamoreaux 1985).

⁸ The idea of the corporation as a social form of insurance served as a new legitimating and technical discourse in support of the massive integration of firms. Corporate consolidation was seen as a new kind of freedom from the hazards of modern industry, taken as collective rather than individual (Levy 2012, 265).

time, therefore, but *judgment* in the face of irreducible uncertainty was the field where questions of distribution and power were ultimately decided.

This is also the greater social and political significance of Knight's famous distinction between risk and uncertainty (RUP, 35, 45), a centerpiece and much cited element of his work (Lawson 1985; Brooke 2010). "Risks" stood for measurable, calculable probabilities of loss and reward that were consistent with the idea of perfect knowledge of consequences. Uncertainty, on the other hand, represented all that was inherently unknowable, dividing society into leaders and followers, income-earners and "surplus-earners." Uncertainty-bearers, as I discuss in the next section, were market-makers: the condition for the possibility of markets. Bidding against each other for productive services, entrepreneurs created markets for labor, capital, and even risks. Profits were the purely residual reward for this economic function.

Thinking

The mechanistic world that emerges from marginalist analysis, Knight will ultimately argue, is an inhospitable one. Reducing all human activity to automatic necessity, it leaves no room for reflection, deliberation, and true decisions. The realm of perfect markets, premised on the wide availability of perfect knowledge is, therefore, the realm of pure and constant activity, where

man's energies are devoted altogether to doing things; it is doubtful whether intelligence itself would exist in such a situation; in a world so built that perfect knowledge was theoretically possible, it seems likely that all organic readjustments would become mechanical, all organisms automata. (RUP, 268)

In contrast, Knight's discussion of uncertainty focused not on human action, but on human reflection and motivation. The "laws" of uncertainty don't begin with externally satisfied needs and wants, but with states of consciousness and complex guessing-games as they interact with our emotional world. "With uncertainty present," Knight continues, "doing things, the actual

execution of activity, becomes in a real sense a secondary part of life; the primary problem or function is deciding what to do and how to do it” (ibid.). If market information “imprints” its mechanical dictates on the minds and actions of individuals, the realm of profit and loss is one of transformative decision-making.

The most profound effect of uncertainty is, therefore, the division of the human world into a realm of mechanical doing and a realm of thinking and judging, each giving “human life” a specific meaning. There is a redemptive quality to our fundamental ignorance as human beings. “We should not want our activity to be all perfectly rational,” mused Knight, “we *do* strive to reduce uncertainty, even though we should not want it eliminated from our lives” (238). A layer of reflectivity thus envelopes the socio-economic world, giving rise to a new protagonist: the entrepreneur, who occupies primarily the former and makes room for the latter, by projecting, anticipating, and acting on her intuitions.

From the perspective of entrepreneurs, markets were something entirely different from what they were to consumers, lenders, or workers. Markets were the grounds for a bidding contest, where fear, self-confidence, or wishful thinking drove prices up and down in a prospective bartering of expectations. From the perspective of a society where entrepreneurs existed, markets were also transformed. Alongside their role of allocating resources and supplying needs, they were now a site for the translation of uncertainty into certainty; a mechanism that also transferred wealth from the many to the few. Working through the logic of uncertainty, Knight’s existential divide would lead him to accept a sharp distinction among persons, as they occupied radically different social positions based on their attitudes towards the future.

Importantly, however, the reflective split of human life, though it was the basis for social division, was not an essentialist view of humanity. Individuals were not bound to either position

by class or personal traits, but traveled in and out of them, moved by different, at times competing passions and incentives. Knight built his realm of reflection and judgment from materials circulating in early-twentieth-century social-Darwinism,⁹ pragmatism, and behavioral psychology, which he approached with the same critical distance he used for marginalist abstractions.¹⁰ The tension between thinking and doing does not resolve itself seamlessly into Knight's final dichotomy, but takes a longer detour into the biology, psychology, and social-embeddedness of human consciousness and the human mind. The ultimate social split along the 'uncertainty line' begins with the highly plural, individuated social reality Knight envisioned, as though carved by uncertainty into the uniform behaviors of the social mass. Unlike the automated *homo oeconomicus*, attitudes towards known and unknown dangers, as Knight and his contemporaries argued, were highly diverse and idiosyncratic, breeding a host of human types and organizing them in hierarchical relationships.

⁹ Like other liberals, Knight drew on the Spencerian notion that personal traits and social structures develop from the interaction between human biology and the social and natural environments. Knight's 'social-Darwinism' thus formed part of his critique of Progressivism, a movement deeply entangled with eugenics, and its substitution of natural selection with interventionist "state selection" (Leonard 2005).

¹⁰ Knight's "antipositivism" (Hammond 1991) included a methodological component and an ethical one. Like his critique of the marginalists' mechanical model, he saw in the positivist reduction of all knowledge to empirically observable patterns a severe limitation on scientific explanatory power, as well as a narrowing of human experience (see also Hands 2006; Emmett 2013).

Human hierarchy, in this view, began with a fear-driven evolutionary coping mechanism that eventually became the human consciousness, displacing much of human life from its biological substrate to the epiphenomenal world of projection and imagination. In his broad classification of human types and capacities, Knight set off from the assumption that all consciousness, and therefore all reason, were “forward-looking” (203).¹¹ To survive, advanced organisms relied on their ability to gear up resources not only in the face of present danger, but ahead of future ones. It was the ability to conjure an emotionally stirring image of danger in one’s mind that allowed organisms to overcome it (201). Our complex interaction with such forward-facing imagery forms part of the reflective nature that separates us from automata: “we *perceive* the world before we react to it, and we react not to what we perceive, but always to what we *infer*” (201).¹²

From this basic evolutionary premise unfolded a complex typology of attitudes towards both danger and its anticipation (241). Individuals differed in things like their ability to make accurate

¹¹ Knight remains uncharacteristically silent on the sources for his theory of human consciousness and intelligence. One plausible reference is the active debate among materialists, mind-body dualists, and pragmatists on the role of consciousness in guiding human behavior (see, e.g. Bode 1921). Two common origins for Knight and the pragmatists were the work of Henri Bergson (Dewey et al. 1917) and of Herbert Spencer (Pearce 2017).

¹² Part of Knight’s recurring invective towards the human automaton targets the burgeoning science of “behaviorism” both in economics and psychology (Fiorito 2009). The reduction of human action to unconscious instinct, in his view, falls short because it ignores things like human error, judgment, choice, and purposive action. See, e.g., Knight 1925; RUP, 202-3.

judgments and sensible plans, but also in their willingness and ability to act on their plans, their confidence in their judgments, and finally their taste for uncertainty itself:

Distinct from confidence felt is the *conative attitude* to a situation upon which judgment is passed with a given degree of confidence. It is a familiar fact that some individuals want to be sure and will hardly “take chances” at all, while others like to work on original hypotheses and seem to prefer rather than to shun uncertainty... (RUP, 242)

The important role Knight attributes to confidence in one’s powers and to one’s “conative attitude”—one’s drives and inhibitions—is further mirrored in his unique take on the theory of probability. Under conditions of true uncertainty, Knight argued, probability theory is inapplicable and must be supplemented with the art of estimates: the educated guess. The true expertise behind estimates was not classification or deduction, but judgement: properly estimating the value of the estimate itself, usually by examining the person making it (227).

Uncertainty, Knight summarized, “select[s] men and specialize[s] functions” (270). His emphasis was not on some kind of virtuous courage or innate talent, but on the right combination of confidence, reliability, and a gambling spirit that singles out some for this unique social role. The duality of doing and judging, therefore, finally translates into a stark division of humanity into leaders and followers; a hierarchy of decision-makers and the contractually employed, of responsible control and directed labor. If, in the absence of uncertainty, control was a matter of mechanical coordination, then the “exercise of judgment involving *liability to error*” now required “the assumption of *responsibility* for the correctness of his opinions [as] a condition prerequisite to getting the other members of the group to submit to the manager’s direction” (276). Only upon the (convincing) assumption of responsibility, often backed by material collateral (350), does a manager become an entrepreneur.

In a passage singled out by critics (see, e.g., Coase 1937), Knight further explains the inextricable bond he identifies between control and uncertainty-bearing: “with human nature as we know it it would be impracticable or very unusual for one man to guarantee to another a definite result of the latter’s actions without being given power to direct his work” (RUP, 270). In the “enterprise system... the confident and venturesome ‘assume the risk’ or ‘insure’ the doubtful and timid by guaranteeing to the latter a specified income in return for an assignment of the actual results” (269-70). “The essence of enterprise,” continues Knight,

is the specialization of the function of *responsible direction* of economic life... a special social class, the business men, direct economic activity; they are in the strict sense the producers, while the great mass of the population merely furnish them with productive services, placing their persons and their property at the disposal of this class... Any degree of effective exercise of judgment, or making decisions, is in a free society coupled with a corresponding degree of uncertainty-bearing, of taking the responsibility for those decisions... With the specialization of function goes also a differentiation of reward. The produce of society is similarly divided into *two kinds of income*, and two only, contractual income... and residual income or *profit*.” (271)

The wage-profit system as formed in the presence of uncertainty transforms the meaning and mechanism of competitive markets in important ways. If all other economic actors enter markets to satisfy needs and earn an income, entrepreneurs enter markets to compete for productive inputs and determine market prices with their future projections. Markets no longer equalize actually existing supply and demand, but present-day expectations of future supply and demand (273). In such a reality, the estimates of entrepreneurs, backed by concrete assurances and a willingness to act, are indispensable for the very possibility of a market society. Only because entrepreneurs are willing to guarantee today the earnings of tomorrow, the argument goes, can there be a market for labor and for capital goods in the first place. In the final section, I look at the ways this market-making function is shaped by a unique type of reward: profit.

Profit

Entrepreneurs' unique position as market makers is reflected in Knight's idea of profit; the main vehicle for the transfer of wealth along the 'uncertainty line'. For Knight, there is no doubt that entrepreneurs have a right to their profits, regardless of their size. On the other hand, as high as one individual's profits may be, Knight also believed that "business as a whole suffers a loss" (365); as a class, entrepreneurs lost more than they won. To understand these contrary characterizations and their significance for Knight's nonmeritocratic theory of distribution, it is helpful to look more closely at his definition of profit: a residual and unimputable return that is both highly individualized and thoroughly social.

To begin with, profit is not a market-rate but a market *residuum*. As Knight repeatedly emphasizes, profit is "unimputable:" it is not a return on investment or remuneration for work, which means it bears no proportion to the finite amounts of labor and capital put into a product (308-9). This was a direct refutation of the distributive ideal put forward by Clark, which suggested that (under perfect competition) market outcomes guarantee a fair return, proportional to contribution. Knight's insistence on an unimputable remainder not only left profit outside markets' mechanical laws but rendered it limitless and decoupled it from claims to merit. The question then arises: if profit isn't a direct and secure form of remuneration for effort, accuracy, or, importantly, the discomfort of risk-taking, then what is the inducement to carry uncertainty? It is on this point that Knight's theory appears to sanction the very high returns of some as a powerful, quite irrational incentive.

Despite Knight's detailed classification of human types, his entrepreneur is not, in the bottom line, simply a superior predictor, or even a person particularly prone to act on her intuitions. Accepting a high level of risk-exposure, according to Knight, is driven by culturally constructed

impulses coupled with deeply ingrained human irrationality. In a society that prizes private property and attaches many political and social benefits to individual wealth, incentives must necessarily come in the form of conspicuous material rewards (320, 351). The entrepreneur is “largely motivated by a desire... to obtain a large increase in his wealth in a short time” (333). And yet, even in such a society, Knight argues, a powerful motivation can be found in “the desire to excel, to win at a game, the biggest and most fascinating game yet invented, not excepting even statecraft and war” (360). There is more to the profit motive, therefore, than the highly inegalitarian premise that dominates capitalist society when Knight is writing, and perhaps even more in the present day.

The Knightian typology, from which the entrepreneurial “type” emerges, reveals a set of contrary passions and dispositions among humans, due in part to our instinct, but primarily to the ways society has refashioned human “instinct.” It therefore remains flexible and elastic, responsive to institutional transformation. As Ross Emmett has shown, for Knight, markets were charged as much with creating needs, wants, and tastes as with catering to them. The meaning of social progress was the creation of “more, and better wants” (Knight, in Emmett 2013, 101). Where “profits” are primarily construed as “get rich quick” schemes, a certain kind of greed, coupled with confidence and hearsay will motivate a specific type of person to become an “uncertainty-bearer.” A society which prizes socially-oriented investment, innovation, or success in more collaborative games, will, by this logic, produce very different entrepreneurs.

It is also important to remember why Knight sees profit motives as somewhat, or even predominantly, irrational. This is because profit is inherently social. It reflects the interdependency of all entrepreneurs, which usually leads to individual and even aggregate losses. Since profit is the outcome of a contest of expectations, not only about the future, but

about the expectations of others (281), an entrepreneur's success is always dependent on the fortunes of all other entrepreneurs. When ability is high all around, profits will, at best, tend to be *low*, since everyone has a good sense of what the future holds. When general confidence is overly high, prices of labor and capital are inflated, bringing losses for the entire entrepreneurial class. In a world, therefore, where entrepreneurs are characterized by over-confidence, "are not the critical and hesitant individuals, but rather those with restless energy, buoyant optimism, and large faith in things generally and themselves in particular," estimates tend to be higher than real gains (366). Profits disappear and aggregate losses abound with the collective tendency to amplify basic human fallacies around chance and uncertainty, the "inveterate belief on the part of the typical individual in his own 'luck'" (RUP, 235-6).

Modern markets, for Knight, mirror the human condition. They are at once deeply material and highly reflective, shaped between animal instincts and a developed human consciousness. There is almost a determinism to the system of transfers and promises Knight sets up in the face of capitalist uncertainty, which breeds its own hapless bearers through a combination of conspicuous reward and the allure of the game. By proposing a world of economic activity that is itself determined by image and projection, Knight not only situated markets within an ancient evolutionary narrative, but also fit them into a philosophical countermovement. Knight's form of liberalism sought to retain a separate and special status for the "ethical society"—a separate space where values dominate instinct and deliberation shapes a life in common beyond the technical problem of social control (Knight 1936, 231; see also Emmett 2013, 67-69).

Responsible decision-making did not bestow a modern-day virtue upon industry leaders, as we find in Weber, nor did it cultivate a virile, daring spirit among the bourgeois masses, as one finds in Schumpeter. Rather, to understand the Knightian entrepreneur, we need to take seriously

Knight's existentialist and liberal-democratic concerns. For Knight, the figure of the entrepreneur exemplifies the transformative potential of real decisions, decisions that allow one to transcend any "given inner nature," providing "a margin of choosing to *be* one thing or another," a "margin of creative self-change" (Knight 1925a, 349-50). What business life symbolizes for Knight, to varying degrees, is a sphere of significant decisions. In the longer arc of the intellectual history of risk and profit the Knightian entrepreneur is the key to understanding markets not through their mechanical, self-perpetuating laws, but through the conditions of their possibility. These are grounded in a distinctly human experience and set of faculties: responsibility, greed, fear, self-confidence, and judgment.

Conclusion

Though economists of risk in equilibrium, from the 1930s onwards, were quite explicitly readers of Frank Knight's early work, his main message appears to have largely been lost. That message, the core of his later turn away from economics to social theory and history (Emmett 2013, 116; Burgin 2009), was that irreducible uncertainty cannot be addressed with the tools of economic mechanics. Knight did not have an economic theory of uncertainty, but rather a social and an existential one. The encounter with, and answer to, uncertainty, depended on the human ability to offer reliable guarantees and to take responsibility for one's decisions. Not many cared to assume this position, and those who did, did so with the expectation of great rewards. Knight had envisioned a world that was, from the perspective of a fully human life, substantively divided, separated by habits of action and decision-making into a realm of reflection and a realm of automated doing.

In this article, I argued that Knight's seminal work on profit offers important insights into the distributive outcomes of markets under uncertainty and their inherent tendency towards sharp inequality. Moreover, by taking up distributive questions, Knight's work exemplifies broader trends in Progressive-era American economics and helps us reflect on the meaning of the marginalist turn for the concerns of political, social, and normative theorists. Finally, when one considers the prolonged career of risk in shaping financial markets, Knight's early account, explicitly embraced, if perverted, by early financial theory, is also valuable for understanding the more specific implications of a ballooning financial sector for questions of inequality and social organization.

Though Knight's contribution on each of these fronts is undeniable, it is important to emphasize that his own motivations only partly overlapped with the problem of inequality. The main stakes of Knight's argument hinge on a different problem: the mechanization of human conduct. While he registered the effects of uncertainty on the skewed distribution of wealth in society, he did not problematize them. Rather, Knight focused on the ways uncertainty opened up a distinct aspect of commercial human life that, while embedded in material relations, remained irreducible to any kind of technocratic logic. This could explain the somewhat bewildering lack of outrage, or at least concern, apparent in Knight's accounts of the distributive implications of market-making: massive transfers of collective wealth to the hands of the few, based on an advantage only loosely connected with individual merit.

And yet, the Knightian framework is valuable for exposing this foundational market tradeoff, and, through its flexibility, for pointing the way to a different kind of system. Even if one disdains Knight's specific kind of 'social-Darwinism,' or sees his account as reductive or detrimental to social mobility, such critiques ought to be qualified by the functionalist nature of

Knight's typology (which sets it apart from both Schumpeter and the Progressive eugenicists).

To the extent that each individual will at times be risk-loving and at others risk-averse, the road to becoming an entrepreneur is not closed off by definition. Moreover, even Knight admitted that the entrepreneurial function was, for the most part, split and divided across largescale economic organizations, primarily firms, stripping any single individual from claims either to profit or to a heroic status (300). Finally, different incentives and institutional arrangements could potentially create different entrepreneurs. High profits were mandated primarily by the predominance of private property in capitalist society.

Knight's pivot from distribution to the problem of human action, therefore, highlights something more than the distributive bottom-line of markets under uncertainty. Indeed, it shows that there is no single and necessary bottom-line to this problem. His account reveals the lingering social divisions caused by fear, by the reluctance to assume responsibility, or by the affective pull of the wager. It further exposes the true costs of the mechanization not only of social theory, but of life itself, as it mimics these theoretical constructs. In the unique intellectual and institutional context to which Knight was responding—corporate consolidation, insurance, marginalism, and behaviorism—he was able to identify the dangers inherent in the “perfect markets” paradigm. Not only the automatization of human conduct posed risks for democracy, but the price paid to assimilate society to its perfectly predictable, mechanized ideal: inequality, hierarchy, and social division.¹³

¹³ A present-day equivalent can be seen in the distributive concessions made to large high-technology companies, whose expertise is in large part dedicated to the automatization not only of commerce but of more substantive social interaction and political behavior.

By definition, the kind of true decisions that give rise to markets and sustain them, remain beyond the purview of economic laws. Knightian uncertainty does not describe an alternative mechanics for aspects of economic life bracketed by marginalism (though his account of insurance should be seen precisely in this way). Rather, an existential set of concerns, undergirded by human psychology, social convention, and political sanction are the site where promises and guarantees can be exchanged. It is, therefore, a line of argumentation that had been out of step, from its inception, with the trajectory of modern economics and its expansionist ambitions, not least among Knight's Chicago successors.

In the coming decades, economists, from John Hicks to Kenneth Arrow and William Sharpe, would proceed to conceptualize a market entirely devoted to the buying and selling of risk, namely the financial market, expanding Knight's program of applying insurance principles to equilibrium analysis. What these new financial models (especially their postwar, highly formalized versions) would leave out is precisely Knight's account of individual uncertainty-bearing as a condition for the ce of markets; a function that implicates society in wide social asymmetries and income disparities. A normative theory of markets, I propose, must begin from the concessions made to market makers, whether individuals or, increasingly, institutions. As the Knightian project shows, behind the market-making function one will usually rediscover the elements discarded by high theory: change, uncertainty, and social conflict.

Works Cited

- Anderson, Elizabeth. 1995. *Value in Ethics and Economics*. Cambridge, MA: Harvard University Press.
- Arrow, K. J. 1964. "The Role of Securities in the Optimal Allocation of Risk-Bearing." *The Review of Economic Studies* 31 (2): 91–96.

- Ascher, Ivan. 2016. *Portfolio Society: On the Capitalist Mode of Prediction*. New York: Zone Books.
- Aspromourgos, Tony. 2005. *On the Origins of Classical Economics: Distribution and Value from William Petty to Adam Smith*. London: Routledge.
- Becker, Gary Stanley. 1971. *The Economics of Discrimination*. Chicago: University of Chicago Press.
- Boatright, John R. 2011. *Finance Ethics: Critical Issues in Theory and Practice*. Hoboken, NJ, USA: John Wiley & Sons, Inc.
- Bode, B. H. 1921. "Intelligence and Behavior." *The Journal of Philosophy* 18 (1): 10–17.
- Boushey, Heather, J. Bradford De Long, and Marshall Steinbaum, eds. 2017. *After Piketty: The Agenda for Economics and Inequality*. Cambridge, Massachusetts: Harvard University Press.
- Brooke, Geoffrey. 2010. "Uncertainty, Profit and Entrepreneurial Action: Frank Knight's Contribution Reconsidered." *Journal of the History of Economic Thought* 32 (02): 221–235.
- Brown, Wendy. *Undoing the Demos: Neoliberalism's Stealth Revolution*. Cambridge, MA: MIT Press, 2015.
- Burgin, Angus. 2009. "The Radical Conservatism of Frank H. Knight." *Modern Intellectual History* 6 (03): 513–538.
- . 2013. *The Great Persuasion: Reinventing Free Markets since the Depression*. Cambridge, MA: Harvard University Press.
- Clark, J. B. 1892. "Insurance and Business Profit." *The Quarterly Journal of Economics* 7 (1): 40–54.
- . 1902. *The Distribution of Wealth: A Theory of Wages, Interest and Profit*. New York: The Macmillan company.
- Coase, R. H. 1937. "Nature of the Firm." *Economica* 4: 386–405.
- Cook, Eli. 2018. "The Great Marginalization: Why Twentieth Century Economists Neglected Inequality." *Real-World Economics Review* 83: 20–34.
- Dagan, Hanoch. 2017. "Markets for Self-Authorship." *Cornell Journal of Law and Public Policy* 27: 577–600.
- Dewey, John, Addison Webster Moore, Harold Chapman Brown, George Herbert Mead, Boyd Henry Bode, Henry Waldgrave Stuart, James H. Tufts, and Horace Meyer Kallen. 1917. *Creative Intelligence; Essays in the Pragmatic Attitude*. New York: H. Holt and Company.
- Dworkin, Ronald. 2000. *Sovereign Virtue: The Theory and Practice of Equality*. Cambridge, Mass.: Harvard University Press.

- Emmett, Ross B. 2013. *Frank Knight and the Chicago School in American Economics*. London; New York: Routledge.
- Epstein, Gerald A. *Financialization and the World Economy*. Edward Elgar Publishing, 2005.
- Fiorito, Luca. 2009. "Frank H. Knight, Pragmatism, and American Institutionalism: A Note." *The European Journal of the History of Economic Thought* 16 (3): 475–87.
- Foucault, Michel. 2008. *The Birth of Biopolitics: Lectures at the Collège de France, 1978-79*. Translated by Michel Senellart. Basingstoke, England ; New York: Palgrave Macmillan.
- Hammond, J. Daniel. 1991. "Frank Knight's Antipositivism." *History of Political Economy* 23 (3): 359–81.
- Hands, D. Wade. 2006. "Frank Knight and Pragmatism." *The European Journal of the History of Economic Thought* 13 (4): 571–605.
- Hayek, Friedrich August. 1937. "Economics and Knowledge." *Economica* 4 (13): 33–54.
- Heath, Joseph. 2018. "On the Very Idea of a Just Wage." *Erasmus Journal for Philosophy and Economics* 11 (2): 1–33.
- Hawley, Frederick B. 1893. "The Risk Theory of Profit." *The Quarterly Journal of Economics* 7 (4): 459–79.
- Herzog, Lisa. 2017. *Just Financial Markets? Finance in a Just Society*. Oxford; New York, NY: Oxford University Press.
- Hicks, John R. 1939. *Value and Capital; an Inquiry into Some Fundamental Principles of Economic Theory*. Oxford: Clarendon Press.
- Hirschman, Albert O. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Cambridge, Mass.: Harvard University Press.
- Hopkins, William S. 1933. "Profit in American Economic Theory." *The Review of Economic Studies* 1 (1): 60–66.
- Horn, Rob van, and Philip Mirowski. 2009. "The Rise of the Chicago School of Economics and the Birth of Neoliberalism." In *The Road from Mont Pèlerin: The Making of the Neoliberal Thought Collective*, edited by Philip Mirowski and Dieter Plehwe. Cambridge, MA: Harvard University Press.
- Hutchison, Terence Wilmot. 1953. *A Review of Economic Doctrines 1870-1929*. Oxford: Clarendon Press.
- Ingrao, Bruna, and Giorgio Israel. 1990. *The Invisible Hand: Economic Equilibrium in the History of Science*. Cambridge, Mass.: MIT Press.
- Jaffé, William. 1976. "Menger, Jevons and Walras De-Homogenized." *Economic Inquiry* 14 (4): 511–24.

- Knight, Frank H. 1925a. "Being and Doing." In *Frank H. Knight in Iowa City, 1919-1928*, edited by Ross B. Emmett, 349–51. Bingley: Emerald.
- . 1925b. "Energy, Human Energy and Value: Review of the Economy of Human Energy by T. N. Carver." In *Frank H. Knight in Iowa City, 1919-1928*, edited by Ross B. Emmett. Bingley: Emerald.
- . 1936. "Pragmatism and Social Action." *International Journal of Ethics* 46 (2): 229–36.
- . 2012. *Risk, Uncertainty and Profit*. Courier Corporation. [RUP]
- Knight, Jack, and Melissa Schwartzberg. 2019. "Privatization." *Nomos* 60. New York: New York University Press.
- Kreitner, Roy. 2019. "Voicing the Market: Extending the Ambition of Contract Theory." *University of Toronto Law Journal* (Advance Online, January 8): 1–42
- Krippner, Greta R. *Capitalizing on Crisis*. Harvard University Press, 2011.
- Lamoreaux, Naomi R. 1985. *The Great Merger Movement in American Business, 1895-1904*. Cambridge; New York: Cambridge University Press.
- Lawson, Tony. 1985. "Uncertainty and Economic Analysis." *The Economic Journal*, 909–927.
- Leonard, Thomas C. 2005. "Mistaking Eugenics for Social Darwinism: Why Eugenics Is Missing from the History of American Economics." *History of Political Economy* 37: 200–233.
- Levy, Jonathan. 2012. *Freaks of Fortune: The Emerging World of Capitalism and Risk in America*. Cambridge, Mass: Harvard University Press.
- Medema, Steven G. 2013. "Chicago Price Theory and Chicago Law and Economics: A Tale of Two Transitions." In *Building Chicago Economics: New Perspectives on the History of America's Most Powerful Economics Program*, edited by Robert Van Horn, Philip Mirowski, and Thomas A. Stapleford. Cambridge: Cambridge University Press.
- Mehrling, Perry. 2010a. "A Tale of Two Cities." *History of Political Economy* 42 (2): 201–219.
- . 2010b. *The New Lombard Street: How the Fed Became the Dealer of Last Resort*. Princeton University Press.
- Meyer, Marco. 2018. "The Right to Credit." *Journal of Political Philosophy* 26 (3): 304–26.
- Mills, Charles W. 1997. *The Racial Contract*. Ithaca: Cornell University Press.
- Mirowski, Philip. 1984. "Physics and the 'marginalist Revolution.'" *Cambridge Journal of Economics* 8 (4): 361–79.
- Okun, Arthur M. 2015. *Equality and Efficiency the Big Tradeoff*. Washington, District of Columbia: Brookings Institution Press.

- O'Neill, Martin. 2017. "Survey Article: Philosophy and Public Policy after Piketty." *Journal of Political Philosophy* 25 (3): 343–75.
- Pateman, Carole. 1988. *The Sexual Contract*. Stanford, CA: Stanford University Press.
- Pearce, Trevor. 2017. "American Pragmatism, Evolution, and Ethics." In *The Cambridge Handbook of Evolutionary Ethics*, edited by Michael Ruse and Robert J. Richards. Cambridge: Cambridge University Press.
- Persky, Joseph. 2000. "The Neoclassical Advent: American Economics at the Dawn of the 20th Century." *Journal of Economic Perspectives* 14 (1): 95–108.
- Pistor, Katharina. 2013. "A Legal Theory of Finance." *Journal of Comparative Economics, Law in Finance*, 41 (2): 315–30.
- Radin, Margaret Jane. 1987. "Market-Inalienability." *Harvard Law Review* 100 (8): 1849–1937.
- Ripstein, Arthur. 2009. *Force and Freedom: Kant's Legal and Political Philosophy*. Cambridge, Mass.: Harvard University Press.
- Robinson, Joan. 1969. *The Economics of Imperfect Competition*. London: Palgrave Macmillan.
- Sandel, Michael J. *What Money Can't Buy: The Moral Limits of Markets*, 2013.
- Sanders, M. Elizabeth. 1999. *Roots of Reform: Farmers, Workers, and the American State, 1877-1917*. Chicago: University of Chicago Press.
- Satz, Debra. 2012. *Why Some Things Should Not Be for Sale: The Moral Limits of Markets*. New York; Oxford: Oxford University Press.
- Schumpeter, Joseph A. 2011a. *The Entrepreneur: Classic Texts by Joseph A. Schumpeter*. Edited by Markus C Becker, Thorbjørn Knudsen, and Richard Swedberg. Stanford, CA: Stanford University Press.
- . 2011b. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Translated by Redvers Opie. New Brunswick; London: Transaction Publishers.
- Sharpe, William F. 1964. "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk." *The Journal of Finance* 19 (3): 425–42.
- Sklar, Martin J. 1988. *The Corporate Reconstruction of American Capitalism, 1890-1916: The Market, the Law, and Politics*. Cambridge; New York: Cambridge University Press.
- Smith, Adam. 1976. *An Inquiry into the Nature and Causes of the Wealth of Nations*. Edited by R. H Campbell, Andrew S Skinner, and William B Todd. Oxford: Clarendon Press.
- Spencer, Herbert. 1855. *The Principles of Psychology*. London: Longman, Brown, Green, and Longmans.

- Tomasi, John. 2012. *Free Market Fairness*. Princeton: Princeton University Press.
- U.S. Congress. 1975. *Securities Act Amendments of 1975*. S. 249. Pub. L. 94–29, 94th Cong., June 4.
- Walras, Léon. 1954. *Elements of Pure Economics, or, the Theory of Social Wealth*. Translated by William Jaffé. London: Allen and Unwin.
- Weber, Max. 1992. *The Protestant Ethic and the Spirit of Capitalism*. Translated by Talcott Parsons. London, New York: Routledge.
- Weintraub, E. Roy. 2002. *How Economics Became a Mathematical Science*. Durham; London: Duke University Press.
- Winch, Donald. 1972. “Marginalism and the Boundaries of Economic Science.” *History of Political Economy* 4 (2): 325–43.