

# Uncertainty, Profit, and the Limits of Markets

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## Abstract

The neoclassical market model is the overwhelming basis for contemporary views of markets as fair, efficient, or both. But is it an appropriate starting point? The article draws on Frank Knight's 1920s work on the economics of uncertainty to show that the ideal of perfect competition conceals a tacit trade-off between equality and certainty. Largely undetected, this trade-off continues to govern financialized capitalist democracies, evading normative and political debate. By explaining how markets and firms resolve the problem of uncertainty, Knight shows that all supposed market benefits, even allocative efficiency, are not costless to society. More specifically, Knight argued that modern markets are premised on a tacit agreement between a handful of "daring" entrepreneurs and the "risk-averse" public: the former agree to carry the uncertainties of business-life in return for a substantially larger share of its power and rewards. Despite the highly static assumptions of neoclassicism, therefore, and its linked assumption of perfect knowledge, uncertainty is far from absent in modern economics. It is built into firms and markets and manifests itself as a steep social and material hierarchy.

## Keywords

inequality, risk and uncertainty, markets and justice, Frank Knight, financialization, theories of the firm

The past decade, bookended by a major financial crisis and global pandemic, has stirred much conversation about uncertainty and our limited means to manage it. This article draws on the 1920s work of Frank Knight to argue three main things. First, that, alongside other functions, markets play a direct role in mitigating economic uncertainties. Second, that this role has been bracketed and dangerously ignored by mainstream neoclassical economic models and the normative theories that rely on them. And third, that the institutions and agreements that undergird market risk-management are not costless to society. Even as the immense value of the credit, payment, and wage-labor systems is revealed through the ravages of crisis, the regular price of maintaining these systems remains hidden from view. This price, I will argue, is the systemic drive toward social inequality and a reductive view of human life—a price Knight's critique of neoclassical economics brings to the fore as an urgent political question today.

In mainstream economics and much of the recent normative work on markets and justice, the market, in its ideal form, is a decentralized mechanism for allocating resources and income (Heath 2018; Satz 2012). An analysis attuned to the challenges of uncertainty, however, reveals a second historical role for markets: the allocation of risk-exposure, responsibility, and authority. From the

early development of contracts as a means to secure future obligations (O'Malley 2000) to present-day derivatives exchanges (Ascher 2016; Mehrling 2005), markets have been used to confront uncertainty and put a price on certain kinds of risk-taking. In so doing, they have unevenly dispersed risk and its rewards, duties, and prerogatives.

Knight's theory enters this picture with an additional nuance: a distinction between risk and uncertainty that has fundamentally altered the way we understand the distribution of risk. For Knight, uncertainty represents that which is entirely unpredictable and incalculable about the future while risk is an insurable future contingency. The latter can be widely diffused and effectively handled with the tools of probabilistic calculus and neoclassical economics. The former, however, requires what Knight called individual "uncertainty-bearers," who gained a measure of real authority and control and could lay claim to substantial pecuniary compensation. While readers have predominantly focused on the epistemological

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dimensions of Knight's distinction (e.g., Langlois and Cosgel 1993; Lawson 1988; LeRoy and Singell 1987; Runde 1998), in this article, I foreground its social and political significance as it underpins his account of power and inequality in modern markets.

Society, as Knight shows, pays a price for its security and greater certainty: the profits of the entrepreneur. The entrepreneur is an "uncertainty-bearer." She offers other economic actors *guarantees* of regular, predetermined payments, such as wages or interest, but receives only an uncertain return. She is paid last and loses first, assuming the greater weight of possible future failure. But she could also make tremendous gains. Profit, for Knight—and ever since—was an inherently unlimited, residual return. This potential for conspicuous reward was crucial. Without the entrepreneurs' guarantees—either as individuals or in the name of the corporations they led—there would be no markets in labor, capital, or commodities at all. Someone had to be enticed to take on the uncertainty.

According to Knight's idea of profit, therefore, market economies are founded on a trade-off between equality and *certainty*. Knight, like many others, takes it as a given that individuals are risk-averse and willing to pay for greater certainty. But the trade-off, as he lays it out, is more than a simple insurance scheme. Society "pays" for security in sums that cannot be calculated in advance. More importantly, it pays in more than just money. "Profit," for Knight, signifies the entrepreneur's unique position. Having assumed responsibility over her decisions and their economic impact, she is also handed the necessary power to direct and control enterprises and people.

The main reason to return to Knight's account today is that this fundamental trade-off continues to govern capitalist democracies, largely undetected. To the extent that "profit," especially speculative financial profit, is still frequently regarded as the inherently unlimited prerogative of "risk takers," "innovators," and other uniquely situated individuals, Knight's insights remain highly pertinent. Left unacknowledged and unchecked, I propose, the presumed trade-off between equality and certainty has led to a gross misalignment between risk and reward, responsibility and authority: uncompensated exposure on a massive scale and an overemphasis on a small handful of "risk-takers" that receive exorbitant returns and excessive power.

The article reconstructs Knight's theory of profit and its largely overlooked distributive and social significance. In the first section, I discuss the role of neoclassical "perfect competition" in shaping contemporary market ideals and lay out Knight's three main critical targets: the model's static assumptions, its mechanistic reductionism, and its implied meritocracy. The following sections consider each of these critiques in detail: the question of

mechanical reduction in the second section, the problem of time and dynamics in the third, the hierarchies introduced by uncertainty in the fourth, and profit as the non-meritocratic return behind some of the starkest market inequalities in the final section. I conclude with a discussion of Knight's important insights on the costs of the neoclassical model and ideal, his theory of the firm as the source of market direction and risk-management, and his work's potential applications in labor- and financial-market regulation.

## Perfect Competition

Even as the crisis of mounting inequality returns to the main stage of social theory (see, for example, Boushey, De Long, and Steinbaum 2017; O'Neill 2017), capitalist markets retain many of their purported virtues in contemporary normative work. At least in their ideal form, markets are imagined as an extension of our most fundamental rights to freedom and autonomy (Dagan 2017; Taylor 2013; Tomasi 2012) or even celebrated as a leveling force (Becker 1971). Markets are also consistently expected, sometimes assumed, to produce fair and just outcomes, rewarding economic actors for their relative contributions (for an extended critique of this view, see Heath 2018, 3–4). Even normatively thinner definitions of markets as the main means of non-coercive social coordination, tend to take their allocative efficiency as a given (Dworkin 2000; Okun 2015). Although not all markets are deemed equally appropriate for these tasks (Anderson 1995; Radin 1987; Sandel 2012; Satz 2012), liberal critics of markets tend to reinforce at least some of these assumptions by expecting markets to live up to their promise of human betterment or at least to not impede it.

What liberal critics and market advocates alike tend to leave intact, often unquestioned, is the model of the market itself. Markets, in this broad paradigm, allocate goods and other resources under conditions of perfect competition. They do so efficiently if they have managed to clear all supply and demand and to optimize individual utility using only the internal adjustments of the price mechanism. More recent efforts to account for markets' legal infrastructure share the basic contention that markets are a collection of voluntary, bilateral agreements between individuals of equal standing (even if unequal social positions), sanctioned and enforced by the public (Ripstein 2009; Satz 2012, 15–16).

The mechanical, atomist model behind the ideal of "perfect competition," as historians have shown, belongs to a transformative moment in the history of the economics discipline in the late-nineteenth century.<sup>1</sup> Its unique abstractions were a sharp departure from the more dynamic and deeply anthropological classical "labor theory of value," which spoke a language of class division,

on one hand, and human flourishing, on the other. The new, “marginalist” mode of economic thinking was modeled on modern physics, and especially energetics: markets reconceived as systems of (individuated) forces seeking and finding equilibrium (Ingrao and Israel 1990; Jaffé 1976; Weintraub 2002).

Although ostensibly removed from the social analysis of their predecessors, the new model was not in fact value neutral or purely descriptive. 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 (Heath 2018, 11; Satz 2012, 18). Although the model has come under regular criticism, it has survived largely intact for over a century and across geographical divides.

Frank Knight’s work in the 1910s and 1920s offered an early and pervasive critique of this model. His account showed that no market benefits, not even allocative efficiency, are costless to society. While markets may be non-coercive, they nonetheless require some significant social concessions. To get at these more tacit agreements and costs, Knight focused on the highly abstract assumptions and rigid conditions required for markets to be efficient, in a neoclassical sense: perfect knowledge, timeless settlement of all exchange, certainty, a static economy. What real-world institutions and behaviors, he asked, allow markets to approximate these ideal conditions? Knight believed that modern firms (and financial markets) were our main tool for assimilating an uncertain world to the laws of a model premised on certainty and perfect knowledge. Large, hierarchical, publicly traded corporations were, for Knight, the seat of the entrepreneurial function and the site of the social “double contract” between the entrepreneur as uncertainty-bearer and the “contractual-income” earner.

With the neoclassical model serving as a regular placeholder for “the market,” Knight’s critical approach remains vitally important today. Far from Marxist, Knight wrote from an avowedly liberal perspective as a confirmed neoclassicist economist.<sup>2</sup> He does not attack equilibrium analysis as such nor proscribe its extensive use. But he does circumscribe it, foregrounding the model’s significant remove from reality and revealing its more concealed social costs. Knight’s critique is valuable for showing how, to create a level playing field of voluntary, contractual exchange, we must first accept a radically different type of “contract.” For Knight, efficient markets rely on the many giving up control, authority, and the greater part of the rewards of economic collaboration to gain greater security and certainty. It is this social contract of sorts that

structures the power relations within the modern firm and shapes the distribution of income in society.

In addition, Knight’s account undercuts any attempt to portray markets as somehow “naturally” meritocratic. Although Knightian entrepreneurs are “selected” to their position in a form of social-Darwinism, as I will show, his account nonetheless reverses a long tradition that saw profits as rightfully earned on the basis of talent and effort.<sup>3</sup> For Knight, profits, properly so-called, are not earned but *won*, often in haphazard contexts driven by overconfidence. Such an approach was uncommon even among Knight’s contemporaries. Most iconically, Joseph Schumpeter, renowned for his own, highly influential theory of the entrepreneur, saw the latter as a uniquely capable individual, rising above a mundane and habit-ridden bourgeois life through extraordinary “strength of will” (Schumpeter [1928] 2011, 241–42). In contrast, Knight’s entrepreneurs are not necessarily competent managers or talented forecasters. Instead, his theory of the entrepreneur is fundamentally grounded in chance and the duties it imposes.

Finally, Knight’s critique of equilibrium analysis is focused as much on its ethical implications as on its material outcomes. Understanding human exchange, needs, and values through a highly mechanized model, he argued, comes with a significant existential and epistemological toll. For Knight, the neoclassical model accurately describes life’s *mechanical* aspects, and those aspects only. It provides an automated image of society, where human choices and plans are reduced to instincts and whims (Knight 1921, 59, hereafter RUP). This critique, as readers have shown, forms part of Knight’s larger offensive against the positivist reduction of scientific knowledge and the new, Progressive ambition, to apply social science as a form of social control (Emmett 2013, 65; Hammond 1991; Hands 2006). The greater our efforts to make our models a reality, Knight warned, the greater the danger of losing sight of the more significant spheres of human experience: the aesthetic pleasures, religious experience, and, importantly, democratic deliberation.

In light of these wider concerns, Knight framed his critique of perfect markets as a theory of uncertainty and the profits of the entrepreneur—key components left out of neoclassical models. The idea of an automated, unguided equilibrium of autonomous forces eclipsed questions of enterprise, direction, and subjection, which his work would bring to the fore. The profit-driven system, Knight showed, is one in which a wide consensus exists around inequality as the necessary cost of mitigating 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.

## 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.” In neoclassical theory, perfect competition emerged a mechanical solution for two related allocative problems: “the assignment of tasks and the apportionment of rewards.” Markets perform this role through the working of self-interest. Individuals, reduced to a calculating, means-ends logic, pursue the greatest returns for their efforts and rationally barter to fulfill their needs (RUP, 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 equality of cost and gain, mean that when market transacting is through, the rewards from production have been fully allocated among all contributors, 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; Weintraub 2002). The marginalist 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 replaced with utility maximizing human atoms, moved by the force of their desires and coming to rest in a state of equilibrium, when desires are satisfied. The problem of the social distribution of surplus had given way to the problem of choice and allocation of scarce resources (Medema 2013).

Knight’s work should be understood as a reflection on this limitation of the field of economic study, beginning with the epistemological and existential costs of mechanical reduction. From its “point of view of the gods” (RUP, 423), he showed, neoclassical theory explains the system of exchange using a principle of the “conservation of value,” analogous to the physicists’ principle of energy-conservation. “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 in desire and other motive-forces) to value in its “kinetic” state (income, consumption, gratification), moving like an electric current (Knight 1925b, 424).

What allows value to retain this flawless convertibility, Knight claimed, was rational conduct under conditions of perfect knowledge; an equally “mechanical,” instrumentalist reduction of human motivation. Of all the necessary abstractions of “perfect markets,” or the conditions under which equilibrium of forces is possible, the most important was the assumption that

the members of the society act with complete “rationality” . . . 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)

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” (RUP, 77–8).<sup>4</sup>

The irony of this hyper-rational, sovereign omniscience, as Knight emphasizes, is that it is premised on decision-making but effaces the true meaning of individual choice. Perfect information, were it a reality, would, in Knight’s vivid description, work its way through the economic system, transforming human nature and imprinting its rational imperatives onto people’s minds. Perfect markets as a lived reality 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)

For fully rationalized market actors, decisions are limited to comparing quantities of an abstracted “value in exchange,” which they either create or expend (RUP, 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

One of the main challenges for equilibrium analysis was the problem of time and change, which collided with the model's highly static assumptions. In neoclassical thought, economic conditions were assumed to be fixed and unchanging, making perfect knowledge at least plausible as an assumption (Ingrao and Israel 1990, 103–5). This was one of the reasons why profit, itself eliminated in a state of competitive equilibrium, reemerged in early-twentieth-century economic thought as an important framework for dealing with the dynamic reality beyond the model.

Knight's exploration of the limits of the static model developed in conversation with the largely American "risk theory of profit," whose main proponents were Clark, F. B. Hawley, 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 the laws of perfect competition. As a residual income, profits (and losses) accounted for all that perfect markets did not: technological innovation, population growth, natural disasters, and so on (Clark 1902; Hopkins 1933). 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 highly significant that time entered Knight's system *before* profit was ever introduced. 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 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 of automated economic choice. Markets, Knight claimed, would translate probable future losses into present prices by widely applying the "insurance principle" (RUP, 213). For this reason too, the insurer was not a profit-maker. A world where all future losses were objectively calculable in advance and effectively insurable, would have no residual returns at all (RUP, 247; see also LeRoy and Singell 1987).

Knight's use of insurance principles to adapt the equilibrium model to the demands of business dynamism 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).

Actuarial reasoning was also employed to explain the rise of the modern corporation as an institutional answer to mounting business risks. Corporate mergers on a truly unprecedented scale (Lamoreaux 1985; Sanders 1999) served as the backdrop for Knight's claim that uncertainty was the main driver of business concentration (RUP, 244), joining an emerging corpus of theories of the firm (Langlois and Cosgel 1993, 456). These new theories looked to balance the dangers of monopolization against the benefits of scale and coordination in an era of mass production and often destructive competition (Fiorito 2013; Rutherford 2015; Sawyer 2018).

Risk consolidation and its "socialization" in the firm arose in this context as prominent justifications for trusts and corporate mergers (Levy 2012, 265)—an explanation Knight adopted in full into his dynamic equilibrium model. Modern firms, he claimed, use centralized management to minimize the risks of bad decisions (as errors, he supposed, would cancel out, to a degree), while public ownership dispersed investment risks (RUP, 252–4). As I show next, however, this was only one way the modern corporation was an answer to uncertainty.

By arguing that risk was compatible with competitive equilibrium, Knight delineated a different and separate jurisdiction for profit. The problem with time, he showed, was not that it undermined the assumptions of perfect markets, as Clark and others had thought. Rather, the problem was that it created a category of unknowns about which economic actors were ignorant by definition. Not time but *judgment* in the face of irreducible *uncertainty* was the field where questions of distribution and power were ultimately decided (Langlois and Cosgel 1993, 460).

This, therefore, is the greater social and political significance of Knight's distinction between risk and uncertainty (RUP, 35, 45)—a political correlate rarely acknowledged in the vast literature on this most famed aspect of his theory. "Risks" stood for measurable, calculable probabilities of loss and reward that were consistent with the idea of perfect knowledge of consequences. Uncertainty, on the contrary, represented all that was inherently unknowable, dividing society into leaders and followers, contractual and residual earners. While time imposed risks that could be handled with insurance markets and corporate consolidation, uncertainty dictated the modern firm's hierarchical structure and the pecuniary compromises of the wage contract.

## Thinking

The mechanistic world that emerged from marginalist analysis, Knight will ultimately argue, was inhospitable. Reducing all human activity to automatic necessity, it left no room for reflection, deliberation, and true decisions.

The realm of perfect markets, premised on the wide availability of perfect knowledge was, therefore, a 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, the realm of decisions under uncertainty was the very opposite. In the third part of his book, Knight shifts his focus from our actions to the internal deliberation that precedes them. "With uncertainty present," he claimed, "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" (RUP, 268). 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, with far reaching social consequences.

The most profound effect of uncertainty, as Knight describes it, is the division of the human world into a realm of mechanical doing and a realm of thinking and judging, each giving an entirely different meaning to the idea of a "human life." From the perspective of entrepreneurs, markets looked very different than they did 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 answering needs, they were now a site for the translation of uncertainty into certainty. In so doing, they were also responsible for large transfers of wealth and authority from the many to the few.

Knight built his realm of deliberation and judgment from materials circulating in early-twentieth-century social-Darwinism,<sup>5</sup> pragmatism, and evolutionary psychology, which he approached with the same critical distance he applied to marginalist abstractions.<sup>6</sup> On his way to his final dichotomy of uncertainty bearers and "contractual earners," the thinkers and the doers, he took a long detour into the biology, psychology, and social-embeddedness of human consciousness. Uncertainty, as he saw it, had carved a diverse and elaborate social reality into the uniform behaviors of the social mass. Unlike the automated *homo oeconomicus*, Knight and his contemporaries saw attitudes toward known and unknown dangers as idiosyncratic and varied, breeding a host of human types and organizing them in hierarchical relationships.

In Knight's evolutionary origin story, human hierarchy began with a fear-driven coping mechanism that eventually became the human mind, displacing much of human life from its biological substrate to the epiphenomenal world of projection and imagination. All consciousness, Knight argued, and therefore all reason, were "forward-looking" (RUP, 203).<sup>7</sup> 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 up an emotionally stirring image of danger in one's mind that allowed organisms to overcome it. In this way, our complex interaction with forward-facing imagery gave rise to our reflective nature: "we *perceive* the world before we react to it, and we react not to what we perceive, but always to what we *infer*" (RUP, 201).

From this basic evolutionary premise, Knight derived a complex typology of attitudes toward both danger and its anticipation (RUP, 241). Individuals differed not only in things like their ability to make accurate 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. The important role Knight attributes to confidence in one's powers and to one's "conative attitude"—one's drives and inhibitions—is mirrored in his unique take on the theory of probability. Alongside a priori deduction and statistical frequency—the two main forms of probability inference—Knight spoke of "estimates." True uncertainty, he claimed, required a form of educated guess or structured intuition about future events that cannot be grouped and classified together. The relevant expertise behind "estimates," moreover, was not prediction, but judgment: an estimate of the value of the underlying estimate, usually on the basis of the person making it (RUP, 227; see also Langlois and Cosgel 1993).

Uncertainty, Knight summarized, "select[s] men and specialize[s] functions" (RUP, 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. Importantly, Knight saw this decision-making, uncertainty-bearing function as a *leadership* function. If universal certainty makes control a matter of mechanical coordination, then the "exercise of judgment involving *liability to error*" requires, for Knight, "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" (RUP, 276). Only upon the (convincing) assumption of responsibility, often backed by material collateral (RUP, 350)—that is, only by offering reliable guarantees on top of any exercise of judgment—does a manager become an entrepreneur. Entrepreneurs, really the entrepreneurial function as a

central function of modern firms, provide markets not only with an indispensable form of risk management, but with *direction*.

In this way, Knightian social “selection,” which relies on a loosely defined “fit” and especially on the assumption of responsibility, divides humanity into leaders and followers. It is a hierarchy of responsible control and directed labor, albeit with labor’s supposed consent. “With human nature as we know it,” Knight reasoned,

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. And on the other hand, the second party would not place himself under the direction of the first without such a guaranty. The result is a “double contract” of the type famous in the history of the evasion of usury laws. (RUP, 270)

As in the medieval “double contract,” an invisible surplus changes hands: profit underwrites the modern social contract, where security is bought with a transfer of power.

In the “enterprise system,” Knight summarized, “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” (RUP, 269–70). “The essence of enterprise,” he famously concludes,

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. (RUP, 271)

The wage-profit system, born of the pressures of uncertainty, transforms the meaning and mechanism of competitive markets. If all other economic actors enter markets to satisfy their needs and raise resources, 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 (RUP, 273). In such a reality, the estimates of entrepreneurs, backed by concrete assurances and a willingness to act, are the conditions for the very possibility of market exchange. 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 assets in the first place. As entrepreneurial expectations are joined with real power, they will also determine the course these markets will take.

## Profit

Entrepreneurs’ unique position as the founders and directors of markets is reflected in Knight’s idea of profit as 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. That said, Knight also believed that, as high as one individual’s profits may be, “business as a whole suffers a loss” (RUP, 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.

In contrast with classical and neoclassical theories (Hirsch 2021a; O’Donnell 1990), profit, for Knight, is not a market rate but a market *residuum*. As he repeatedly remarks, 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 (RUP, 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 (marginal) contribution. Knight’s insistence on an unimputable remainder not only left profit outside of markets’ mechanical laws but rendered it limitless and undermined its claims to merit. As an idea of profit divorced from effort, accuracy, or even the discomfort of risk-taking, it raised fundamental questions: What precisely was profit a return for? How did it induce uncertainty-bearing? It is here that Knight’s theory ends up sanctioning the very high returns of the few as a powerful, not always rational, incentive.

Knight’s entrepreneur is not “naturally selected” based solely on her superior predictions, plans, or ability to act on them. Ultimately, her willingness to accept high levels of risk exposure is driven by culturally constructed impulses, often coupled with a healthy dose of irrationality. The entrepreneur, in other words, is always the product of a specific environment. 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 (RUP, 320, 351). The entrepreneur is “largely motivated by a desire . . . to obtain a large increase in his wealth in a short time” (RUP, 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” (RUP, 360).

There is more to the profit motive, therefore, than what Veblen (1912) called “pecuniary emulation.” As

Ross Emmett has shown, Knight saw markets as responsible for *creating* needs, wants, and tastes, as much as with catering to them. Social progress, for him, stood for the creation of “more, and better wants” (cited in Emmett 2013, 101). Where “profits,” therefore, are primarily construed as “get-rich-quick” schemes, a combination of greed, confidence, and hearsay will motivate a specific type of person to become an “uncertainty-bearer.” In contrast, a society that 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 that profit, while a highly individual form of return, is also inherently social in its derivation, breeding one of profit’s greater ironies: that entrepreneurs as a class tend to lose. Entrepreneurial fates are entirely intertwined. Not only is one person’s loss another’s gain, but the behaviors and tendencies of entrepreneurs in the aggregate can have devastating effects on individual fortunes. As profit is the outcome of a contest of expectations, not only about the future, but about the expectations of others (RUP, 281), an entrepreneur’s success is always dependent on the decisions of all other entrepreneurs. When ability is high all around, profits will, at best, tend to be *low*, as everyone has a good sense of what the future holds. When general confidence is overly high, the price of labor and capital is inflated, bringing losses for the entire entrepreneurial class.

Wherever entrepreneurs are primarily 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 (RUP, 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). Windfall gains for the rare few conceal the highly integrated social realities of uncertainty-bearing.<sup>8</sup>

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 a degree of determinism to the system of transfers and promises Knight sets up in the face of capitalist uncertainty, which produces 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 determined by image and projection, Knight not only situated markets within an 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 in Knight’s account did not reveal a modern-day virtuousness on the part industry leaders, as we find in Weber, nor did it cultivate a virile, daring spirit among the bourgeois masses, as one finds in Schumpeter. What business life did symbolize, to varying degrees, was a sphere of significant decisions, a “margin of creative self-change” (Knight 1925a, 349–50). 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

The “perfect market” ideal in Knight’s retelling conceals a fundamental trade-off between certainty and equality. Beyond the methodological and epistemological considerations that have primarily occupied readers, Knight’s important distinction between risk and uncertainty mandates a social division of labor, separating uncertainty bearers from everyone else. It is a social and political distinction that guides Knight’s reflections on authority and responsibility, on income inequality, and on the terms of a meaningful human existence. As corporations today are empowered to provide greater mechanical efficiency and as human conduct assumes an ever more automatic character in consequence,<sup>9</sup> Knight’s conclusions remain as relevant as they were a century ago.

For contemporary readers, Knight’s account is valuable, first and foremost, for showing that even the most minimalist normative justification of markets, their allocative efficiency, presupposes services, institutions, and social relations that are not costless, or neutral with respect to power. Knight shows us that, to run an efficient, competitive market, we must accept centralized control and authority at the level of the firm, large transfers of wealth from one part of society to another, and highly bureaucratic organizations to mitigate business risks. These are often bracketed, not only in modern price theory, but in normative theories that have made the neo-classical model their working ideal of markets.

Knight’s critique of market abstraction heralded a new age of theories of the firm as the necessary, far less “spontaneous” counterpart to market transactions, prefiguring the 1930s work of Coase (1937), Berle and Means (1933), and others. Knight himself concedes that it is the firm as an organizational structure that provides much of the risk “specialization” and “consolidation” that allow modern markets to run (RUP, 287). The modern corporation, he further shows, has also significantly fragmented the

entrepreneurial function, now comprised of long hierarchical chains that mix subordination and responsibility in different measures (RUP, 300).

Nevertheless, Knight's unique take on the theory of the firm places particular emphasis on its highly individual aspects: the entrepreneur's (or top manager's) non-mechanical faculties of judgment and deliberation and the opportunity to exercise them in the face of true uncertainty. In particular, Knight highlights the social and political gesture which, he argues, is the foundation of modern markets and corporate governance: providing guarantees against an unknown future and assuming both authority and responsibility for the outcomes of collaborative enterprise.

Largely unnoticed, the Knightian trade-off continues to govern much of the contemporary business world. One notable example is profit itself. Current accounting conventions, taxation schemes, and even corporate-governance principles, like "shareholder primacy," have accepted Knight's definition of profit as a limitless, "unimputable" remainder after all "complete contracts" have been fulfilled (Hart 2017; Langlois and Cosgel 1993, 462). Another is the financial system, which is conceived—in its theories, asset-pricing models, and even regulation—as a market for risk, where profits are essentially "risk premiums" on the Knightian model of returns to uncertainty-bearing (Hirsch forthcoming; Mehrling 2010).

In light of these prominent examples, it is imperative to critically examine Knight's essential claim: that, even with great leaps in insurance technology, managerial science, and, importantly, finance, individuals will still and always have to assume the role of uncertainty-bearers for society. The idea of *individual* uncertainty-bearing is also up for debate, given the vast social safety nets provided by the welfare state, both to individuals and to corporations. The most pressing question, however, is whether we, in our political communities, are willing to pay the price of this unique, individuated function, even if it is possible and effective. A revived discussion of the Knightian trade-off around these fundamental questions is thus a necessary supplement to any conversation on the political and moral limits of markets.

But Knight's theory does more than raise urgent questions for political debate. Even if we were to substantially qualify his basic claim that entrepreneurs are socially necessary and legitimate, his account remains useful in evaluating actually existing institutions and reform proposals. First, as Knight shows, financial risk-management is far from a pure "market solution" to the problem of uncertainty, in the sense of a self-regulating system that appraises individual risks and trades them off to specialists with a taste for adventure. The profits of financial actors and institutions should be measured against their actual achievements in eliminating uncertainty and protecting households and companies from the upheavals of

the business cycle. Concrete benchmarks of economic resilience should also be used to evaluate the performance of markets as compared with social-insurance schemes.

Second, just like for Smith, Weber, Clark, or Schumpeter, the profit-driven system in Knight's account gains its legitimacy from the security it can provide not only investors, but, especially, workers. A view of profit as a mechanism charged with providing economic security is an opportunity to re-imagine the wage-labor system and assure that the uncertainties faced by labor are fully compensated (as are the systemic risks faced by communities). It also offers ways to bolster wage labor in the face of new competitors, like mobile-platform-based "gig" work or universal basic income. Critics of the profit-driven system may rejoice in these new models, which undermine profits' key justification in the provision of a regular and guaranteed pay. But defenders of worker and consumer rights should also be wary. As Knight's account shows, severing the links between profits and wages would drastically minimize the reciprocity between workers and employers (broadly defined) and the public responsibilities and duties of corporations.

In *Risk, Uncertainty, and Profit*, Knight's marginalism and strong institutionalist influences formed a hybrid account of market mechanics alongside their imperfections, the social relations they set up, and the organizational forms they require. The book found mixed reception and a divided audience, many of whom preferred to leave aside Knight's important insights on uncertainty (Blaug 1985, 463; Reddy 1996). Instead, postwar economic theory focused almost exclusively on the place of calculable risk in its efforts to formalize the equilibrium model,<sup>10</sup> a crucial simplification imported wholesale into normative theory through its heavy reliance on the neoclassical ideal. As both approaches continue to enjoy wide esteem, what must now be brought into view is the price paid to assimilate society to its perfectly predictable, mechanized ideal.

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## Notes

1. This moment in the history of economic thought parallels late-nineteenth-century developments in various strands of contract law that promoted an “atomist” view of contracts, emphasizing the fiction of equally situated parties and giving “freedom of contract” both priority and a wide interpretation (Sawyer 2018, 30–31). This view of contracts is deeply ingrained into the contemporary normative definition of markets as an extension of modern contracts (Kreitner 2019).
2. Along with Jacob Viner, Knight gained considerable reputations as the lead instructor in price theory at the University of Chicago, the early methodological and ideological foundation of the postwar neoliberal “Chicago School” (Burgin 2009; Emmett 2013, 147–49; Medema 2013, 162).
3. With important exceptions, such as Marx, Henry George, and Knight’s contemporary, Thorstein Veblen, the classical and neoclassical traditions relied on the assumption that wages, profits, and other contributions generally tracked the efforts of labor and enterprise. This idea is embodied in Adam Smith’s “master of industry,” who earned profits for her “risk and trouble” (Hirsch 2021a; Smith 1976, 1.6.18, 69), or in Max Weber’s (1992, 116) puritan business-person, who was rewarded for her abstinence and industriousness (Gootzeit 2006). The neoclassicals similarly adopted John Bates Clark’s (1902, 3) marginal contribution theory, whereby “free competition tends to give to labor what labor creates, to capitalists what capital creates, and to entrepreneurs what the coordinating function creates” (see also Cook 2018; Persky 2000).
4. On the implicit assumption of perfect knowledge and the infallibility of expectations in the history of economic thought, see Hutchison (1953, 223–26).
5. 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, which called for the substitution of natural selection with interventionist “state selection” in favor of the “fittest” (Leonard 2005, 210).
6. Knight’s “antipositivism” (Hammond 1991) included methodological and ethical components. Like his critique of the marginalists’ mechanical models, he saw the positivist reduction of all knowledge to empirically observable patterns as a severe limitation of scientific explanation, as well as a narrowing of the meaning of human experience (RUP, 365; see also Emmett 2013; Hands 2006). Similarly, his recurring invective toward the human automaton was aimed

at the burgeoning science of “behaviorism” in economics and psychology, which reduced human action to unconscious instinct and ignored judgment, choice, and purposive action (RUP, 202–3; Knight 1925a; see also Fiorito 2009).

7. Knight remains uncharacteristically silent on his sources for this theory of human consciousness and intelligence. His account combines insights from Herbert Spencer as well as Spencer’s later reception by the American pragmatists (Bode 1921; Dewey et al. 1917; see also Pearce 2017).
8. Despite claims to the contrary (Brooke 2010; LeRoy and Singell 1987), Knight was well aware of the changing nature of entrepreneurship with the rise of large, publicly traded corporations. He believed, however, that the function of uncertainty-bearing was extended, rather than undermined, by new forms of risk diffusion (see also Langlois and Cosgel 1993, 464). Foreshadowing later developments in financial theory, Knight also proposed an innovative theory of speculation, which separated diversified portfolio holders (and “passive” investors), who earn an equilibrium rate of return, from truly enterprising investors, who set in motion new businesses—assuming much of the risk and the responsibility for their initial organization—and earn what should properly be seen as profits (RUP, 309).
9. One contemporary example is 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.
10. John Hicks (1946) provides some of the early efforts in this vein, later formalized by Arrow and Debreu in their seminal work on equilibrium (Arrow 1964; Arrow and Debreu 1954).

## References

- Anderson, Elizabeth. 1995. *Value in Ethics and Economics*. Cambridge: Harvard University Press.
- Arrow, Kenneth J. 1964. “The Role of Securities in the Optimal Allocation of Risk-Bearing.” *The Review of Economic Studies* 31 (2): 91–96.
- Arrow, Kenneth J., and Gerard Debreu. 1954. “Existence of an Equilibrium for a Competitive Economy.” *Econometrica: Journal of the Econometric Society* 22:265–90.
- 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.
- Berle, Adolf A., and Gardiner C. Means. 1933. *The Modern Corporation and Private Property*. New York: Macmillan Co.
- Blaug, Mark. 1985. *Economic Theory in Retrospect*. Cambridge: Cambridge University Press.
- 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: Harvard University Press.

- Brooke, Geoffrey. 2010. "Uncertainty, Profit and Entrepreneurial Action: Frank Knight's Contribution Reconsidered." *Journal of the History of Economic Thought* 32 (2): 221–35.
- Burgin, Angus. 2009. *The Great Persuasion: Reinventing Free Markets since the Depression*. Cambridge: Harvard University Press.
- Clark, John Bates. 1892. "Insurance and Business Profit." *The Quarterly Journal of Economics* 7 (1): 40–54.
- Clark, John Bates. 1902. *The Distribution of Wealth: A Theory of Wages, Interest and Profit*. New York: The Macmillan company.
- Coase, Ronald 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: Henry Holt.
- Dworkin, Ronald. 2000. *Sovereign Virtue: The Theory and Practice of Equality*. Cambridge: Harvard University Press.
- Emmett, Ross B. 2013. *Frank Knight and the Chicago School in American Economics*. London: Routledge.
- 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.
- Fiorito, Luca. 2013. "When Economics Faces the Economy: John Bates Clark and the 1914 Antitrust Legislation." *Review of Political Economy* 25 (1): 139–63.
- Gootzeit, Michael J. 2006. "Finance vs Ownership: Mill's Two Abstinenances and the Link between Profit and Interest." *Contributions to Political Economy* 25 (1): 49–61.
- 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.
- Hart, Oliver. 2017. "Incomplete Contracts and Control." *The American Economic Review* 107 (7): 1731–52.
- Heath, Joseph. 2018. "On the Very Idea of a Just Wage." *Erasmus Journal for Philosophy and Economics* 11 (2): 1–33.
- Hicks, John R. 1946. *Value and Capital: An Inquiry into Some Fundamental Principles of Economic Theory*. Oxford: Clarendon Press.
- Hirsch, Roni. 2021a. "Risk and Trouble: Adam Smith on Profit and the Protagonists of Capitalism." *American Journal of Political Science* 65 (1): 166–79.
- Hirsch, Roni. forthcoming. "Uncertainty and Inequality in Early Financial Thought: John Hicks as a Reader of Knight and Keynes." *Cambridge Journal of Economics*.
- Hopkins, William S. 1933. "Profit in American Economic Theory." *The Review of Economic Studies* 1 (1): 60–66.
- 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: MIT Press.
- Jaffé, William. 1976. "Menger, Jevons and Walras De-Homogenized." *Economic Inquiry* 14 (4): 511–24.
- Knight, Frank H. 1921. *Risk, Uncertainty and Profit*. Boston: Houghton Mifflin.
- 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.
- Knight, Frank H. 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, 411–434. Bingley: Emerald.
- Knight, Frank H. 1936. "Pragmatism and Social Action." *International Journal of Ethics* 46 (2): 229–36.
- Kreitner, Roy. 2019. "Voicing the Market: Extending the Ambition of Contract Theory." *University of Toronto Law Journal* 69 (3): 295–336.
- Lamoreaux, Naomi R. 1985. *The Great Merger Movement in American Business, 1895-1904*. Cambridge: Cambridge University Press.
- Langlois, Richard N., and Metin M. Cosgel. 1993. "Frank Knight on Risk, Uncertainty, and the Firm: A New Interpretation." *Economic Inquiry* 31 (3): 456–65.
- Lawson, Tony. 1988. "Probability and Uncertainty in Economic Analysis." *Journal of Post Keynesian Economics* 11 (1): 38–65.
- Leonard, Thomas C. 2005. "Mistaking Eugenics for Social Darwinism: Why Eugenics Is Missing from the History of American Economics." *History of Political Economy* 37:200–33.
- LeRoy, Stephen F., and Larry D. Singell. 1987. "Knight on Risk and Uncertainty." *Journal of Political Economy* 95 (2): 394–406.
- Levy, Jonathan. 2012. *Freaks of Fortune: The Emerging World of Capitalism and Risk in America*. Cambridge: 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, 151–179. Cambridge: Cambridge University Press.
- Mehrling, Perry. 2005. *Fischer Black and the Revolutionary Idea of Finance*. Hoboken: John Wiley.
- Mehrling, Perry. 2010. "A Tale of Two Cities." *History of Political Economy* 42 (2): 201–19.
- Mirowski, Philip. 1984. "Physics and the 'marginalist Revolution.'" *Cambridge Journal of Economics* 8 (4): 361–79.
- O'Donnell, Rory. 1990. *Adam Smith's Theory of Value and Distribution: A Reappraisal. Studies in Political Economy*. Houndmills: Macmillan.
- Okun, Arthur M. 2015. *Equality and Efficiency: The Big Tradeoff*. Washington: Brookings Institution Press.
- O'Malley, Pat. 2000. "Uncertain Subjects: Risks, Liberalism and Contract." *Economy and Society* 29 (4): 460–84.

- O'Neill, Martin. 2017. "Survey Article: Philosophy and Public Policy after Piketty." *Journal of Political Philosophy* 25 (3): 343–75.
- 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.
- Radin, Margaret Jane. 1987. "Market-Inalienability." *Harvard Law Review* 100 (8): 1849–1937.
- Reddy, Sanjay G. 1996. "Claims to Expert Knowledge and the Subversion of Democracy: The Triumph of Risk over Uncertainty." *Economy and Society* 25 (2): 222–54.
- Ripstein, Arthur. 2009. *Force and Freedom: Kant's Legal and Political Philosophy*. Cambridge: Harvard University Press.
- Runde, Jochen. 1998. "Clarifying Frank Knight's Discussion of the Meaning of Risk and Uncertainty." *Cambridge Journal of Economics* 22 (5): 539–46.
- Rutherford, Malcolm. 2015. "Institutionalism and the Social Control of Business." *History of Political Economy* 47:77–98.
- Sandel, Michael J. 2012. *What Money Can't Buy: The Moral Limits of Markets*. London: Allen Lane.
- 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 University Press.
- Sawyer, Laura Phillips. 2018. *American Fair Trade: Proprietary Capitalism, Corporatism, and the "New Competition," 1890-1940*. New York: Cambridge University Press.
- Schumpeter, Joseph A. (1928) 2011. *The Entrepreneur: Classic Texts by Joseph A. Schumpeter*. edited by Markus C. Becker, Thorbjørn Knudsen, and Richard Swedberg. Stanford: Stanford 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.
- Taylor, Robert S. 2013. "Market Freedom as Antipower." *The American Political Science Review* 107 (3): 593–602.
- Tomasi, John. 2012. *Free Market Fairness*. Princeton: Princeton University Press.
- Veblen, Thorstein. 1912. *The Theory of the Leisure Class: An Economic Study of Institutions*. New York: Macmillan.
- Weber, Max. 1992. *The Protestant Ethic and the Spirit of Capitalism*. Translated by Talcott Parsons. London: Routledge.
- Weintraub, E. Roy. 2002. *How Economics Became a Mathematical Science*. Durham: Duke University Press.
- Winch, Donald. 1972. "Marginalism and the Boundaries of Economic Science." *History of Political Economy* 4 (2): 325–43.