

Knight's Theories of Socialism and Capital

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Abstract

This paper examines Frank Knight's views on socialism and on capital and interest in light of some recent claims by Peter Boettke and Karen Vaughn. It makes several points that raise serious questions about the correctness of those claims. First, it argues that on the issue of socialism, the views of Knight and the Austrians were quite similar. Second, by more carefully examining Knight's final contribution to the capital and interest controversy, it shows that the constructs he used – in particular the stationary economy and the Crusonia plant – were quite appropriate for the goal he aimed to achieve. The Austrians did not understand this goal and there is no indication that they examined Knight's final statement. Although Boettke and Vaughn refer to the paper that contains his final statement, it is obvious that they also did not examine it carefully. Finally, this paper finds no justification for the claim that Knight differed from the Austrians on the definition or scope of economics. In the writings that Boettke and Vaughn chose to review, Knight was not interested in problems related to time preference, the period of production, or the time structure of production. But aside from that lack of interest in the same problems with respect to these particular writings, Knight's ideas of the definition and scope of economics appear pretty much the same as those of the Austrians. In any case, Boettke and Vaughn do not provide sufficient evidence to support their claim that Knight's economics was more narrow in scope.

Knight's Theories of Socialism and Capital

The thrust of a recent paper in this journal, “Knight and the Austrians on Capital and the Problem of Socialism,” by Peter Boettke and Karen Vaughn (2003), suggests that Frank Knight differed from the Austrians in the analysis of both socialism and capital and that this difference is due to their different notions of economics. In fact, this paper will show that the analysis of socialism presented by the two “camps” was quite similar. In the case of capital, the paper will show that they talked past each other mainly because they aimed to achieve different goals. Moreover, the Austrians quit the capital debate before Knight had presented his most mature argument. The neo-Austrians later failed to recognize this. That neo-Austrians Boettke and Vaughn (BV) did not realize these facts seems due in large measure to their deficient choice of reference material, especially with respect to Knight.

Regarding socialism, BV relied on statements in a conference paper published in 1936 although, four years later, a substantially revised and more complete version was published in a major journal. Although they cite the later article, they apparently did not consult it or at least did not read it carefully. Regarding Knight's ideas on capital and interest, they relied largely on secondary sources and partly on what appear to be cursory readings of other reference materials. Their most significant omission concerns the role of the *stationary economy*. This concept played an important role in Knight's theory. It is an invaluable aid in dealing with the complexity of real market economy interaction, as shown below. It also helps one distinguish the different goals that the two camps aimed to achieve.

The author writes about the “thrust” of BV's paper. This thrust differs from the single, more reserved aim that BV state. They say that their aim is to show that Knight's notion, or definition, of economics is narrower than that of the Austrians. This paper deals with both the thrust and the more reserved aim. Regarding the reserved aim, it should be evident to the readers of this journal that the most direct way to compare the two camps on the notion of economics is to go directly to statements

about the nature and scope of the field.¹ But BV take a different approach. They describe Austrian broadness in terms of the Austrian recognition of a time structure of production and the decentralized planning that is needed to coordinate that structure. Then they try to demonstrate Knight's narrowness in two ways. With regard to socialism, they claim that while the Austrians regarded the problems of socialism as economic, Knight regarded them as political. With regard to capital and interest, they refer to Knight's neglect of the time structure of production and the market process.

To deal with BV's thrust and claim, this paper discusses Knight's analysis of the two subjects in greater detail and with more appropriate references than BV used. Part one shows that once we take account of the different definitions of the two camps, their analysis of socialism is similar. Part two deals with capital and interest. It shows that the statements about capital and interest that BV regard as evidence of Knight's "narrow and rarified notion of economic theory" (BV: 174) were, in fact, simplifying assumptions. Far from representing a narrow approach to capital theory, the assumptions represent an effort to escape the bounds that the Austrians, along with marginal productivity theorists, excepting J. B. Clark, had imposed on this subject. Part 3 is a brief conclusion.

1. SOCIALISM

BV's commentary on the difference between Knight and the Austrians begins with a comparison of what BV regard as their respective views on socialism. BV especially focus on central planning. They point out that although Knight believed that socialism was "fraught with economic inefficiencies," he argued that "economics could provide no theoretical critique" of it (BV: 156-7).

¹Such an approach may not yield a definitive answer. Although Mises defines the scope and method of economics clearly, Knight does not. To make a judgment about these, one would have to consult Knight 1921, 1924, 1930, 1940b, and 1951.

They go on to observe that Knight regarded the problems of socialism as being of a *political* nature.²

Partly on this basis, they claim that he analyzed problems like socialism and interest rate determination from a very narrow and rarified point of view and that he considered only the “determinant outcomes of rationality” (*ibid.*: 174). Austrians, on the other hand, regarded the problem of central planning as formidable and argued that this alone is sufficient to warrant a rejection of socialism (*ibid.*: 156-7).³

They write that Knight and the Austrians “disagreed completely about the nature of the economics of socialism” (*ibid.*: 158). To help confirm this message, they quote Knight’s article criticizing Mises’s *capital theory*: “Where I agree with Professor Mises’ conclusions, I often find him right for wrong reasons – and reciprocally, right premises being used to support ‘error’” (Knight: 410; BV: 157-8). Thus, they maintain that the two camps disagreed on the economics of socialism and that Knight recognized this disagreement.

BV are generally correct to cite Knight’s reference to the political nature of the judgments needed to determine whether the socialist aims can be achieved through central planning. Nevertheless, their comparison of Knight with the Austrians on socialism contains a significant shortcoming. It fails to consider the full argument as presented in his 1940a article, in which a more thorough context is provided. As a result, BV fail to recognize Knight’s explicit use of *economic* reasoning to ridicule the argument that successful central planning is possible. This failure leads to an erroneous conclusion that Knight had a narrow view of the scope of economics.

By correcting these shortcomings, this part shows that Knight’s analysis of socialism was similar to that of the Austrians and further that there is no strong reason to believe that Mises and

²“Knight was of the opinion that economics could provide no theoretical critique of socialism at all. Any problems that might be encountered in a socialist economy would all be of a political nature” (*ibid.*: 157).

³It is worth noting that in describing Knight’s position, BV seem to conflate central planning with socialism. This may be the best way to present the Austrian position since Austrians equated socialism with a central planning problem. As we shall see, however, Knight used a different definition of socialism. As a result, this conflation operates to confuse rather than elucidate the difference. Whether Knight believed that central planning was possible is an issue that can only be effectively determined by looking carefully at his 1940a paper, as shown below.

Knight differed on the scope of economics. It begins by stating Knight's views in his 1940a paper. Next, it shows that Knight and the Austrians held similar views on the limitations of central planning. Then it shows that there is little grounds for claiming, on the basis of their analysis of socialism, that the two held different notions of economics.

Knight's 1940a Paper

Knight's views on socialism are taken entirely from his 1940a paper. A comparison with the 1936a conference paper on which BV relied shows that it is a revised and substantially expanded version of the earlier paper. The following is a brief summary and is mainly concerned with the points of difference between him and the Austrians. The reasoning in the Knight's paper is described more fully in Appendix 1, which contains references to the page numbers of the original text.

To Knight, socialism referred to a belief that the planners should attempt to *duplicate the market economy more or less down to the last detail*. With this in mind, he tried to identify the system that the socialist planners would have to devise in order to succeed in this effort. He began with the image of a stationary economy. If the only goal of the socialist planners is to maintain a stationary economy, he argued, socialist planners would have to establish markets for consumer goods. They would, with minor exceptions, also have to reward all the factors of production, including the directors of production (Knight did not call them "managers"), according to the marginal revenue product they would receive if they were in a market economy. Moreover, as Knight saw it, the socialists valued individual freedom. Their system would have to leave individuals free to choose both the mix of consumer goods they wanted and their jobs. He did not believe that they could succeed.

The fundamental point he made is that the rewards to factors in the market economy are determined by residual claimant entrepreneurs who take risks.⁴ He could not imagine how, even if

⁴He made another point about families and child production (Knight 1940a: 286-8). It is not necessary to consider that in this context.

socialist leaders could somehow duplicate all of the other characteristics of the market economy, they could devise a system that would duplicate the entrepreneurship of the market economy's residual claimants (*ibid.*: 285).

Knight and the Austrians Compared

Compare this image of the prospects for successful central planning with that of the Austrians, as reported by BV.⁵ BV say that to Mises, socialism means the elimination of private property. Without private property, the market prices of intermediate goods will be "irrational." We can presume this term to mean that the prices could not reflect marginal revenue product as it would be determined *ex ante* by the entrepreneurs of a market economy (BV: 158-9).

Is there a difference between the two? Perhaps, but the difference is not related to private property or the market process. Knight could not see how a system without residual claimancy (private property rights in the income earned by entrepreneurship) could duplicate the results of the what neo-Austrians call the market process – namely the operation of entrepreneurs on the stationary economy.

More telling is Knight's citation of Mises. Toward the end of his paper, Knight wrote the following passage:

Thus the contention of Professor von Mises, and other opponents of socialism, that there would be no objective rationale for the organization of production under socialism...is after all essentially correct for the really serious problem of organization. This is the problem of anticipating substantial changes in the given conditions of economic life and in making necessary adaptations and/or of bringing about such changes (Knight 1940a: 285).

Also see *ibid.*: 260-1n.

It is worth noting that Knight does not express agreement with the Austrian proposition that the equilibrium positions could not be discovered by the central planners. This is most likely because Knight regarded the whole exercise as rather silly. After all, he recognized that the stationary

⁵Both authors have written in this field. See Boettke (1988, 1990, 1991, 1993, 1999, and 2001) and Vaughn (1980).

equilibrium is a fiction to begin with. It seems evident on balance that Knight's writings about socialism do not support BV's thesis that the two camps differed significantly (1) in their judgments about the prospects for successful central planning without a system of private property rights or (2) in their recognition of the market process.

Did Knight and the Austrians Have Different Notions of Economics?

Does an analysis of the views of the Austrians, or at least Mises, and Knight on socialism reveal that the two camps had different notions of economics? The answer is not entirely clear, at least to this author. It is clear, however, that BV failed to take full account of the evidence in the materials they cited (and further that the materials they regarded as evidence were partly irrelevant to their thesis).

BV quote Knight's 1936 conference paper in which he writes:

The problems of collectivism are not problems of economic theory, but political problems and...the economic theorist, as such, has little or nothing to say about them. This holds true whether we consider the problem to be the scientific one of predicting what the collectivist economy would look like in structure and activities, or whether we look at it practically from the standpoint of the right objectives to be pursued and the right principles to be followed in realizing them (1936c, 255; BV 159).

BV cite this statement as evidence that Knight "argued that there was no strictly economic problem of socialism at all" (*ibid.*: 159). The statement, however, deals with two problems that BV do not discuss in their paper. Neither problem relates to central planning or the market process. The citation is beside the point. Surely Mises and other Austrians would have agreed that there is no scientific way to predict what the collectivist economy would look like.

Knight deals with the more relevant problem in his 1940a paper. He writes that the practical problem of achieving the aims of socialism

has to do with...an all-powerful, wise, and benevolent political authority...that would remedy or avoid the many indisputable weaknesses...of the mechanism of economic organization as worked out through free exchange and free contract, operating under the control of market competition...[The issue concerns] the possibility and probability of such an authority being created on earth and among human beings, by political process, and the means and cost...[This problem] is political, not economic at all...The economist, as economist, has nothing to say about [it] (Knight 257-9).

Knight goes on to discuss this problem. He writes that the “socialists themselves have made little effort to put any intelligible concrete content into the picture or ideal” (*ibid.*: 260). In other words, it is difficult to know what kind of economy the socialist advocates would set up to duplicate the market economy and to remedy its weaknesses. However, economic analysis is not totally at a loss.

One thing economic analysis can do: it can show the character of the economic problems with which socialism proposes to deal. And if these are not at all of the sort which socialists assume or represent them to be, no special political competence is required to reject the socialists' appeal for supreme power (and the perquisites thereof) (*ibid.*).

It is possible, he says, *to use economic analysis* to describe the kind of system that is required to achieve the socialist goals. He then proceeds to describe what he sees as the problems with which the socialist will have to deal, the most important of which concerns finding salaried managers who can duplicate the actions of risk-taking residual claimant entrepreneurs. We described these earlier in this section. Toward the end of his description, he writes the following:

The general theory of socialism requires that management be in the hands of salaried appointees of the government. That is, socialism would prohibit the specialization of risk-taking, which is the essence of the entrepreneur function under private enterprise (*ibid.*: 268).

The question is whether these salaried appointees can be expected to achieve the same result as that of the entrepreneurs. Basically, he pokes fun at those who believe that they could. It is in this context that he writes about the political or psychological nature of one's answer.

The contention that the owning entrepreneur, individually subject to loss or the recipient of gain, according to the success of the enterprise, can be replaced by the government, assumed to have no such interest, without loss of managerial efficiency, surely rests more on the will to believe than it does on inference from experience. But this is not impossible; it might work out in that way! It is a political or psychological question, not one of economics (*ibid.*: 269).

This is not the end of the argument, since he goes on to discuss problems beyond those that are relevant to the stationary economy. Specifically, he discusses the problems of choosing the right people to adjust to change, including technological advance, and to engage in research, as shown in Appendix 1.

Precisely what we can make of this total argument in relation to what Knight believes about the scope of economics is not easy to say. One thing seems certain, however. He did not reject the

relevance of what BV identify as economic analysis to helping us understand the ability of central planning to achieve the goals of the socialists.

2. CAPITAL AND INTEREST

BV's second thesis is a compound one and deals with Knight's theory of capital and interest. It is first that Knight believed capital to be a fund, second that his capital and interest theories were static theories, and third that Knight believed that capital was self-perpetuating like the Crusonia plant. All three of these constitute a misinterpretation of Knight's theories of capital and interest and that they demonstrate a lack of understanding of the procedure Knight used to present his theories.

In the following, this paper will argue that Knight's capital theory *in its final form* was actually a theory of endogenous economic growth based on *new* investment.⁶ New investment, argued Knight, raises human capital, albeit to a degree that economists cannot ascertain. His *assumption* of a stationary equilibrium, was a means of isolating the phenomenon of endogenous economic growth from other phenomena in the market economy, as he pointed out. His assumption of constant growth via the Crusonia plant, was a didactic device designed to help him isolate the inherent uncertainty of the economist about the human capital that would result from new investment. Once we recognize the role of the stationary economy and his goal of presenting a theory of endogenous growth due to the human capital consequences of new investment, the reason why Knight could not communicate with the Austrians, and vice versa, becomes clear.

We begin this section by describing Knight's theory in its final form. This requires some amount of extrapolation because the 1944 paper was not directly about interest, but about whether

⁶It is important to stress this final form. Even as late as 1941, Knight did not seem to recognize the importance of making his theory of growth due to human capital the focal point of his theory. In his critique of Mises's capital theory (Knight 1941), he does not introduce anything related to human capital until he mentions invention on the last page of the critique.

there would be long-run diminishing returns. However, “returns” in this phrase means the same thing to Knight as the long run rate of return on investment, which he regarded in all of his works on the subject of which the author is aware as the dominant determinant of the rate of interest outside the stationary equilibrium.⁷ Next we assess BV’s claims about Knight’s theory.

The Theory in a Nutshell

Knight’s theory of interest in its final form turns out to be very simple. Because of this, we can outline it before presenting a more detailed discussion with text references. In doing so, we shall use the more modern term human capital instead of the term knowledge of the productive factors, which was used by Knight.⁸ The theory is a derivative of his theory of the effects of *new* investment. New investment is distinguished from the investment that would be needed to maintain the existing stock of capital goods in a stationary economy. Both occur in a normal market economy (i.e., in one that is not in a crisis or that somehow is retrogressing). New investment, he argued, would increase technical knowledge and possibly other knowledge. In other words, it would increase human capital. Because of the nature of such knowledge, it is reasonable in a market economy to expect that such an increase would be permanent and that it would need no maintenance. Unlike material factors of production technical knowledge would not depreciate partly because it would be captured in the designs of the factors of production, goods, or methods used by producers.⁹ Thus, it is reasonable to assume, he argued, that it is self-perpetuating. Since production possibilities are a direct function of technical human capital, increases in production possibilities that result from investment must also be

⁷Throughout this paper, the author uses the term “market rate of interest.” In reality there are numerous rates of interest corresponding to different lengths of loans, different degrees of uncertainty, and other factors. All of the writers recognized this and sought to abstract from this fact.

⁸Actually, Knight used a variety of terms to mean the same thing. By using consistent terminology, we are able to present the theory more clearly.

⁹Strange as it may seem, the same point was made, in greater detail and with numerous examples, by Howard Baetjer (2000) in a paper published in a journal edited by Boettke. Not surprisingly, Baetjer did not mention Knight.

self-perpetuating, given the various assumptions that we make in building the image of the stationary economy. Material capital needs maintenance, but technical human capital does not.¹⁰

Regarding the return on investment, it is not possible to know this because it is not possible to accurately know the predictions of the entrepreneurs who make the investment. Nevertheless, it is a fact of life that the entrepreneurs make such predictions. These predictions determine the demand for new investments which, in turn, “drag” the market rate of interest higher or lower than the rate that we might assume would be established in a progressing world in which investment produced a constant amount of new technical human capital.

In order to present this theory of capital and interest, Knight began by building an image of a stationary economy. In such an economy, there is a definite money value of capital that stays the same, time after time. He referred to this money value as a *fund*. To describe the observation that, under ordinary conditions, new investment increases technical knowledge, he employed the metaphor of the Crusonia plant.

Knight's Theory of Investment

We divide the discussion of Knight's theory into parts. We begin, as he did, with a statement on method and procedure. Next we describe his theory of economic growth. Then we tell the role of the Crusonia plant. We end by discussing the rate of interest.

Statement of Method and Procedure

The aim of Knight's 1944 paper is to show the importance of the relationship between new investment, human capital, and economic growth. Instead of presenting the theory straightforwardly, however, his approach was methodological. One surmises that he aimed to teach two things at once:

¹⁰Or, what amounts to the same thing for Knight, the maintenance of technical human capital lies beyond the realm of economic calculation. Yet we know that it occurs. For example, families perpetuate themselves as well as their human capital without any significant motivation that falls within the sphere of economic calculation.

(1) the relationship described in the opening sentence of this paragraph and (2) how to best isolate and study this relationship. Thus, he begins with a statement on procedure. On the second page of his paper he writes:

The problem of what happens in consequence of net new investment must be studied under the assumption that investment proceeds under given conditions (*ceteris paribus*). The investigation must begin with the conception of a completely stationary economy, into which new investment is then introduced while all other changes are excluded (Knight 1944: 27).

This should alert the discerning reader that Knight intends to use the “stationary economy” as a tool.¹¹ He goes on to tell how he plans to use it. After assuming that people do not invest in trying to change wants, he writes that his aim is to “consider investment in productive agents of different kinds and in technological improvements, including research, exploration, and invention” (Knight 1944: 27-8). Thus, he clearly states that he is interested in a problem that Austrian economists like Mises and Hayek seemed to have disregarded in their capital theory – economic growth by means of human capital.¹² He follows this by explaining why he uses the stationary economy as a beginning point.

The only procedure which seems to be feasible for the analysis of a highly complex situation is to simplify it by abstraction to the utmost possible degree of generality, and successively to insert more specific complicating factors, and so build in the direction of reality, as far as it is useful or practicable to go. This procedure is particularly called for in a study of the theory of investment, and it is required in a peculiarly drastic form with respect to the starting-point and early stages, because of special circumstances which affect “knowledge,” as a factor in economic life in individualistically organized society (Knight 1944: 28).

He writes here that the purpose of the imaginary construction of the stationary economy is to help deal with the special issue of “knowledge” in the market economy (the “individually organized society”). After arguing that the theory which underlies choices to invest “is the same in all essential

¹¹There can be little dispute about his meaning. But if one is inclined in this direction, he should consult Knight's writing fourteen years earlier regarding the use of the “mechanical analogy” in economics (Knight 1930). Also see his discussion about the use of this construct to elucidate the actions needed to establish a stationary equilibrium – i.e., to elucidate what many modern neo-Austrians call the market process (*ibid.*: 185-189). This paper is discussed in Appendix 2.

¹²Both Mises and Hayek recognized the human capital-producing potential of the market economy. See, for example, Hayek 1958. But they did not single out the human capital that would result from investment of the type that Knight describes here. Moreover, their capital theory had a completely different orientation and goal, as shown below.

general respects for a Crusoe and for a social economy viewed as a whole," he goes on to refer directly to a Crusoe "economy":

[T]he analysis of a Crusoe economy makes it possible to deal with the more fundamental relations in the theory of production, and specifically with the return on investment, while eliminating some major sources of confusion (*ibid.*: 29).

This sentiment is echoed toward the end of the paper.

We can conclude that Knight's assumptions of the stationary economy and the Crusoe economy were designed to clear the way for a presentation of his theory of economic growth. In retrospect, it was the predecessor of the numerous endogenous growth models that have graced the pages of the major economics journals in the last two decades. The (more astute) builders of such models make no pretensions that the economies in the models represent the market economy or the market process. They simply set this aside, by means of a *ceteris paribus* assumption, because their goal is to represent phenomena that are assumed fixed in theories of the market process. Such growth models try to capture the relationship between growth and private property rights, growth and human capital, growth and degree of economic freedom, growth and type of political system, and growth and entrepreneurship in the Schumpeterian sense.

The Theory of Growth

We turn now specifically to Knight's theory of growth. He writes:

It is practically impossible to imagine any investment activity in the real world which is not in some degree rationally experimental, in the sense of being reasonably expected to lead to new knowledge having some enduring economic significance. That is, all investment consists, in part, of investment in new knowledge. Moreover, many of the most ordinary routine economic activities are inherently explorative in some degree and are certain to involve some investment in (or disinvestment from) "things," and also new knowledge, as they proceed (*ibid.*: 40).¹³

¹³We might note in passing the similarity of Knight's concern with production of knowledge about ordinary activities and Hayek's concern with the knowledge of particular circumstances of time and place (Hayek 1945). Hayek treated the fact that knowledge of some change gets transmitted to all of the people engaged in ordinary activities as a "marvel." Consideration of Knight's theory of capital suggests that the market economy may be a marvel in more ways than one.

Shortly thereafter he writes that “[t]he main issue in the whole problem of diminishing returns from progressive accumulation centers in this phenomenon of investment in knowledge and its relation to all other investment” (Knight 1944: 41).¹⁴

There follows a rather lengthy discussion on the meaning of new knowledge and its maintenance. His conclusion is that it is

reasonable to assume that this knowledge is carried forward in the new objects whose creation causes the old to become obsolete. Knowledge is in general cumulative, which means that what is possessed at any time is instrumental and necessary to new discoveries which will supersede it (Knight 1944.: 46).

This view of knowledge implies that human capital does not require maintenance. If there is an advance in technical human capital, it is reasonable to assume that the human capital will stay forever.¹⁵ We may legitimately speak of the cost of maintaining machines, tools, and the physical environment where production occurs. However, we cannot legitimately speak about the cost of maintaining human capital. It is “self-perpetuating.” This argument, if correct, has a profound implication. It means that we cannot fit human capital into the ordinary frame of marginal productivity theory.

But what can we say about the growth of human capital? Knight’s attempt to deal with this question ends his paper. He writes:

¹⁴The emphasis on human capital was not something new that Knight thought up in 1944. He introduced it much earlier. In his 1935 paper on Hayek, he writes about the meaning of capital maintenance. He distinguishes sharply – *and in a way that Hayek or Mises apparently never did understand* – between the maintenance of capital and investment in new capital. The maintenance of capital means a simple mechanical reproduction of the factors of production that are known to be needed to produce the same outputs as before. But investment in new capital leads to increased human capital, in today’s terminology. Moreover, he does not regard this new human capital as capital! He places it in an entirely different class (Knight 1935: 84-7). He writes that “[i]n a free society, the creation of productive capacity in the form of human beings or human qualities is not *called* “investment,” and the result is not *called* “capital.” Hayek’s response to this issue (1936: 216) correctly points out a discontinuity between Knight’s concept of a maintenance of capital and production of new capital. But it does not acknowledge Knight’s remarks about human capital. Knight introduced his second installment of capital and interest with the mandate that the distinction be made between these two “processes,” as he calls them there (1936b: 612). At the same time, Knight’s 1935 paper does not contain the theory of economic growth due to human capital. He did not present this until 1944.

¹⁵This does not mean that he believes that the *production* of knowledge is costless. He is referring here to the *maintenance* of knowledge. He is writing that to the discerning observer, the knowledge of how to make something is contained largely in the thing that is made. It is also typically captured in the initial designs or prototypes. On the other hand, he is suggesting that the knowledge that children acquire is largely outside the bounds of economic reasoning.

The major difficulty is that of thinking of the creation of new knowledge in any form, either quantitatively, in terms of rational investment directed by foresight of consequences and motivated by the "utilitarian" value of the result foreseen in the individual case (or as a probability calculation) or without this character (*ibid.*)...Consequently, we can hardly think of anyone "knowing" the return (actual or probable) to be anticipated from any investment when it is made, or whether there will finally be any net return (*ibid.*).

For our purposes, only one part of his concluding discussion is relevant. He writes that

"[a]ction...always involves some element of faith. The faith is more or less reasonable, a matter of judgment on grounds which lie outside the field of empirical science and mathematical logic" (*ibid.*: 47).

Stated differently, Knight's theory of economic growth was like an appendage to the early neoclassical theory of value and cost, or the marginal productivity theory of distribution. It lumped all of the non-human-capital resources together and then considered the effects, *ceteris paribus*, of the growth of human capital resulting from investment of the type referred above. The theory deduced that this growth would lead entrepreneurs would perceive an expanded opportunity set for using the factors of productions, although the methods of economics could not be used to predict the degree of expansion.

The Role of the Crusonia Plant

We now turn to the role of the Crusonia plant, which has been the focal point of much of the Austrian criticism of Knight. The purpose of introducing the plant, as well as the Crusoe situation in general, is clearly to simplify. Knight's ultimate aim is to discuss the "pure theory of investment." He uses this construct as a teaching tool. He does not believe that human capital grows at a constant rate. The plant is a metaphor for its growth. He uses the constant-growth plant to help him convey his desire to explore the question of how human capital grows. Specifically he writes:

The fact of human inability to foresee the future makes it easy to imagine psychological conditions, particularly states of belief about the future, which would establish for a limited period nearly any situation in the investment market, or in the effective relative estimation of present and future income, which would correspond to this in Crusonia (*ibid.*: 43).

In his 1944 paper and unlike his previous writings, he refrained from assuming a constant growth rate. This change seems to reflect a major change in his thinking about the issue. Previously, he referred mainly to what he regarded as the “fact” that under normal conditions, the wealth of a capitalist economy increases. Growth happens. Although this is true, it is beyond our ability to tell precisely how much growth will occur and, therefore, to precisely determine a rate. Indeed, to describe growth in terms of a rate is presumptuous.

Since Knight did not clearly identify a cause for this growth in his earlier writings, it is not surprising that reviewers of his theory regarded it as mystical. This perception was reinforced by the Crusonia plant assumption. Thus there is some justification for these criticisms with respect to the earlier theory.

The Stationary Economy and the Market Rate of Interest

There is some indication that BV do not appreciate the use of the image of the stationary economy in dealing with problems of capital and interest.¹⁶ It may be worthwhile to state more precisely the problem with which his assumption of a stationary economy was designed to deal. The stationary economy is a means of abstracting from the Fetter-Mises theory of interest based on pure time preference. For these writers, the only important fact is that market interest reflects time preference – the fact that decisions to consume goods and, therefore, entrepreneurial decisions to produce goods, are based on a sooner-or-later consideration. Actors do not organize their actions in such a way that they disregard their more distant future consumption; similarly, they do not disregard their nearer future consumption. They plan to space out their consumption over time, as it were.¹⁷

¹⁶Although BV point out that the use of the stationary economy is unobjectionable “at one level,” they do not discuss what they mean by this. Instead, they go on to criticize Knight for using the construct. They claim that “in Knight’s world, no one makes a deliberate choice about what capital goods to purchase or, what amounts to the same thing, on what future ventures to risk company assets” (BV 169).

¹⁷Knight mentions this theory in his critique of Mises (Knight 1941: 412-3).

Some neo-Austrian writers have correctly inferred from this that a rate of interest would exist in a pure exchange economy.¹⁸ It would also exist in a stationary economy. The important point is that a rate that is based on this consideration yields absolutely no information that is relevant to the investment in *new* capital goods. Time preference theory deduces correctly that a market rate of interest must exist because there will be borrowers and lenders. However, suppose that the rate of interest is such that entrepreneurs want to borrow more money than is available. Then the desire to make new investment will drive up the rate of market interest.

Now it seems relevant at first to say in response that the market rate cannot be driven up unless consumer-savers are willing to wait for a return on their savings. The investor, after all, must obtain funds. The investor acts in the role of the penniless entrepreneur. He must obtain his funds from someone who acts in the role of the consumer-saver. This is true. But the point at issue is not whether investors are constrained by saving. Of course, they are. It is whether their expectations of profit drive the market rate of interest higher than it would otherwise have been.

It might be admitted that entrepreneurs' expectations could drive up the rate. But how, it might be asked, can we tell, logically and theoretically, whether the resulting rate is higher than it would have been if the only factor operating to determine the rate of interest is time preference. The only way to answer this question is to employ an imaginary construction. Obviously, the imaginary construction of the pure exchange economy is insufficient. The appropriate construction is the stationary economy, which contains production. It is precisely this fact that led Knight to use that construction as the point of departure, so to speak. He assumed that the rate of interest in the stationary economy corresponds to the pure time preference rate of interest. But then he asked what would happen to that rate if entrepreneurs expected a return on new investment. The obvious answer is that such expectations would pull the rate up.

¹⁸See, for example, Israel Kirzner (1976) and Laurence Moss (1978).

NeoAustrians have also used the stationary economy as a point of departure in their own theories of economic growth based on the assumption of a fall in time preference. In contrast with production in the real world, the stationary economy has no periods of production to be shortened or lengthened. In order to represent changes that impact on these periods of provision, they introduced either a temporary state in which the period of production is variable (Salerno 2001: 50) or a progressive economy in which the period of production gets longer and longer (Rothbard 1962: 481-2).

Assessment of BV's Claims about Knight's Theory

Armed with a clearer understanding of Knight's theory of capital and interest, we can now assess BV's claims about that theory. As mentioned, BV present what they regard as Knight's theory of capital and interest in order to substantiate the claim that Knight and the Austrians have different conceptions of economics. They write:

Knight argued that economic theory consisted only of the implications of constrained maximization under conditions of timeless certainty; once one moved out of that rarified realm, there was no predictive content to economic talk and hence no scientific value either. Mises and Hayek, on the other hand, believed that economic processes that take place outside of equilibrium were within the legitimate domain of economic analysis (BV: 158).

They carry over this claim in their first statement about Knight's capital theory. They write that

Knight...did not single out capital investment in any way from his rendition of the likely action of "rational" planners. His view was that in this as in all other aspects of economic planning, if they applied marginalist principles, they could duplicate the outcome of perfect competition (*ibid.*:167).

This statement hardly makes sense. On the surface, they seem to be comparing the planning of investors with a central planning board. This cannot be a valid comparison. At a deeper level, it seems that they are comparing the Knight's image of the outcome of investor planning with his image of the outcome of central planning. If this is indeed what they have in mind, it is an invalid comparison on two counts. First, we have already shown that Knight wrote that central planners would have to duplicate the outcome of perfect competition in order to achieve static efficiency. He

did not believe that they could do this. But, even if they could, he argued that they could not duplicate the conditions that would be brought about by entrepreneurship in the face of change. Second, the perfect competition “outcome” to which BV refer is the stationary economy, which Knight regarded as the starting point for his theory of new investment. But they treat it as an ending point.

The first statement they make about Knight's capital theory is as follows:

...Knight's vision of capital was consistent with a perfectly competitive economy in a stationary state...Knight's theory of capital and interest is based on a set of ideal conditions in which investors will have perfect knowledge and will act rationally (*ibid.*: 168).

The first part of this statement is accurate only if we substitute the term “definition” for “vision” and, beyond that, only if we neglect *new* investment. The second sentence is completely wrong. Knight's theory of capital in the stationary economy was based on this assumption. Knight *assumed* perfect competition in the stationary economy order to “eliminate the terrible confusion which results from mixing up the rate of return on investment with the rate of interest on loans...”(Knight 1944: 29). But his theory of investment and interest in the real world, which is the important issue on which the two camps disagreed, assumed extreme uncertainty. This uncertainty is partly the same as the uncertainty present in every investment. It is also partly due to the lack of knowledge of the effects of other investors' investments on human capital. It is impossible to understand Knight's theory without making a distinction between the marginal productivity of capital in a stationary state and the marginal productivity of investment, which Knight defined as out of the stationary state.¹⁹

Next, they write about Knight's conception of capital. They say that although Knight recognized heterogeneous capital goods “with varying degrees of specificity, he did not regard these characteristics to be important to capital theory.”

¹⁹It must be noted that BV seem to have relied for their understanding of Knight's theory of capital and interest on Avi Cohen and Ross Emmet. They credit Cohen and Emmet for having provided “an excellent account of the capital theory debate between Knight and Hayek” (BV: 168n). They also acknowledge at the start of their paper receiving helpful comments from them. There is no indication that they studied Knight's real position or that they looked at the finer points of the Knight-Austrian debates. Neither Cohen nor Emmet, in the works cited by BV, recognized Knight's theory of investment as described here. So one should seemingly hold Cohen and Emmet partly accountable for BV's claims.

...Rather, following J. B. Clark, Knight *believed* that capital is best understood as a fund of value. The fund itself is self-perpetuating in that as some capital goods wear out, they will be automatically replaced by other capital goods that will maintain (or within a growing economy, increase) the value of the capital stock. Indeed, replacement of capital, to Knight (1934, 264), becomes a “technical detail” of the process of maintaining the value of capital (*ibid.*, italics added).

We single out the word “believed” because the correct word is “assumed.” Knight made these *assumptions* with respect to the stationary economy in order to elucidate his theory of endogenous economic growth driven by increases in technical human capital, which he *believed* would occur in the normal course of new investment. The replacement of capital becomes a “technical detail” in the image of a “progressive society,” which is the subject Knight is discussing in the passage that BV quote. The progressive society is a variation of the stationary economy in which the assumption is made that capital is constantly increasing.

It is worth focusing for a moment specifically on the assumption that capital is a fund of value. The best way to think about this is to recognize that if one wants to properly calculate a person's material wealth in a market economy, one should try to determine her net worth, in an accounting sense. In a world of uncertainty, such a calculation is always subjective. Not only the value of an asset but also the identification of what things *are* assets depends on the views of the subject. Of course, statisticians have developed standard ways of defining net worth. But such definitions do not measure up to the requirements of economic theory that assumes intersubjective uncertainty.

Knight's theory of growth started with a stationary economy. In a stationary economy, there is no uncertainty. An exact calculation can be made. Moreover, the net worth of one person can be added to the others so that the concept of aggregate net worth is meaningful. This aggregate net worth is what Knight (and Mises 1966: 251, 294) meant by capital in the stationary economy. It amounts to a capital fund. Moreover, in the stationary economy, this capital fund is perpetual. The same fund self-reproduces, as it were, because of the assumption that the aggregate amount of capital does not change. Thus, the assumption of a self-perpetuating capital fund is an assumption of the stationary

economy construction that Knight used as a starting point for his theory of new investment. He did not *believe* that such an identifiable fund exists in the real world. At the same time, there is no way to present his theory except by referring to such a fund.

After discussing what they take to be Knight's theory of capital, BV turn to his theory of interest.

Knight...denied that time preference had any role at all in the determination of the interest rate. To Knight, the interest rate is basically determined by the marginal productivity of capital; there are no subjective elements such as time preference to enter into the calculation (1935). Again, he reasoned, in equilibrium, the interest rate is the discount rate that equates the capitalized value of any good to its cost of production (BV: 169).

Their citation of Knight on this issue does not have a page number and a close reading of Knight's earlier work shows at least the beginning of a theory that would become more mature in Knight's later writings (see appendix 2). But they do not rely on Knight in any event. They refer to Avi Cohen (1998, 152). Their characterization is only partly correct and illustrates mainly that they did not appreciate (1) the difference between action in the stationary economy and action outside of that economy, and correspondingly (2) the difference between capital in the stationary economy and new investment. Knight *assumed* that the interest rate in stationary equilibrium is determined by the marginal productivity of capital. But he went on to reason that the market rate of interest would be determined, or led, by entrepreneurs' views of the marginal productivity of new investment. In Knight's theory, the marginal productivity of capital is very different from the marginal productivity of new investment. The main problem again seems to be that BV simply did not comprehend the role of the stationary economy.²⁰

BV's last statement on Knight's capital theory is about his use of the Crusonia plant metaphor. They write that his

most mature statement of his theory of capital and interest [is] his Crusonia plant. The Crusonia plant, a metaphor for a country's capital stock, "grows indefinitely at a constant (geometric) rate, except as new tissue is cut away for consumption" (Knight 1944, 30). The only decisions the people of Crusonia have to

²⁰Oddly, they quote from a footnote in which Knight points out the irrelevance of the stationary equilibrium for representing reality. Yet, they seem oblivious to how this footnote relates to their depiction of Knight's theory (BV: 169).

make is how much of the plant to cut for consumption. Saving and investment both are identical to not cutting down part of the new growth (BV 170).

They go on to conclude that, "in Knight's final model of capital, none of the problems that plague real people making real investment decisions are even touched upon" (*ibid.*).

The most remarkable thing about this statement is that it refers to Knight's 1944 article. In light of our earlier discussion of this article, the most charitable conclusion one can reach is that BV plucked this statement completely out of context in order to support some preconceived notion or plan. They could not have thoroughly read the article with a discerning eye.²¹

As pointed out earlier, Knight's theory was concerned with investment that directly and indirectly increases human capital. Because one cannot predict the outcome of such investment, it is not possible to determine what the interest rate will actually be. The Crusonia plant metaphor was a didactic benchmark, similar to the idea of a "natural rate of unemployment" or the "natural rate of economic growth, and neutral money." Economists employ these concepts even though they know that the real rate of unemployment and the real rate of economic growth and real money will always deviate from the natural concept. Their purpose is to enable them to focus on the factors that lead to the deviation (or to deal with some other problem, in which case the assumption of a natural rate functions as a surrogate for a litany of *ceteris paribus* assumptions).

There is no difference between Knight and the Austrians on the use of this procedure. It is possible to deny the reality of a natural rate yet use it as a means of simplification or of isolating another problem. Knight's Crusonia plant is not a metaphor for a country's capital stock which grows indefinitely at a constant rate. It is a metaphor for economic interaction under the conditions of free enterprise in which human capital is continually being produced at a constant rate. Knight used this

²¹One can say almost exactly the same thing about Kirzner (1966: 63-64). He apparently found the Crusonia plant in Knight's 1944 paper but ignored Knight's remarks about how it helps to present the effects on human capital of investment. If nothing else, perhaps the current paper can dispel the 60 years of Austrian myth about Knight's Crusonia plant.

metaphor in order to help isolate the phenomena that actual cause the growth in human capital. In describing these phenomena, he argued that the actual rate of growth could not be known.

3. CONCLUSION

Knight's critique of socialism was based on more or less the same grounds as that of the Austrians. This is not immediately evident because Knight and the Austrians critiqued different notions of socialism. There were some minor differences in their critiques but their different conceptions of economics, if such exist, do not appear to be the source. Regarding capital theory, the Austrians did not understand Knight's theory and BV do not either. What BV take to be his conception of economics is, in fact, a set of assumptions that he made in order to simplify the problem of presenting a theory of economic growth. The theory was based on the idea that any investment beyond that which, in the stationary economy, would be needed to maintain capital, would raise human capital. Because of the nature of knowledge, this increase would be permanent. The decision to carry out new investment affects the rate of interest in a market economy. This effect is not part of the Austrian theory because the Austrian theory does not include the growth of technical human capital. There is no evidence in Knight's capital theory that his conception of economics differed from that of the Austrians. BV's claim that to the contrary is based on either inaccurate secondary sources, an inadequate reading of Knight's theory, or both.

In the author's view, there is a lot to be gained from synthesizing the Austrian theory of interest (read Misesian theory) and Knight's theory of investment. Papers that draw false dichotomies, like that of B-V, obstruct such a synthesis. In fact, the early neoclassical economists like Knight had much more in common with the Austrians than the neo-Austrians want to acknowledge.

Appendix 1

Knight's on Socialism

A close reading of Knight's paper reveals that his goal is to use economic analysis "to show the character of the economic problems with which socialism proposes to deal" (Knight 1940a: 260). His first step is to define the socialist position. He writes that "[s]ocialists accept the social philosophy in accord with which ends are individual rather than social" (*ibid.*: 262). He goes on to write about the implication of this:

Acceptance of the individual's choices as the final criterion of economic value has, as its first concrete consequence or meaning for economic organization, freedom of consumption...And "since the prices of products will have to be set, or the relation between price and supply in each case adjusted, so as to clear the market, it follows that in the whole field of the final distribution of products the mechanism of socialism must be identical with that of capitalism (*ibid.*: 265).

This implies that there must be markets for consumer goods and, accordingly, that there must be some kind of money to enable the consumers to freely choose (*ibid.*). In addition, workers must be paid in such a way that they voluntarily distribute themselves among industries in accord with the efficiency conditions described in marginal productivity theory (*ibid.*: 266). It also implies the same distribution of land and produced factors of production and further that they these be employed with the same technology as that of modern capitalism (*ibid.*: 267).

But there is an important difference: "The main difference is that "socialism would prohibit the specialization of risk-taking, which is the essence of the entrepreneur function under private enterprise" (*ibid.*: 268). Given this prohibition, the question to be asked is whether the socialist leaders could institute some substitute for risk-taking and the management activities. Knight says that there is no way to know for sure. Therefore, socialism is built on the premise that the socialist leaders can provide a substitute for the residual claimant who performs the entrepreneur function. He goes on to say that he cannot imagine how that could be done (*ibid.*: 271).

For Knight, the results of performing the entrepreneur function cannot be predicted. Therefore we cannot know whether the socialist leaders will be able to duplicate the entrepreneur's risk-taking and management. It is a "political problem." Clearly, what Knight calls a political problem is quite different from what we would today, enlightened by public choice theory, call a political problem.²²

This ends Knight's discussion of the problem faced by socialist leaders who aim to duplicate *a stationary economy*.²³ It is important to note that although he treats this as a problem for the stationary economy, he nevertheless includes the "entrepreneur function" as part of the problem.

Knight goes on to discuss an economy that differs from the stationary economy. He asks how production would be carried out under socialism in light of *change*. He writes that change is

the heart of the problem of socialism. Relevant discussion calls for analysis of the natural course of events in economic life, how far it involves change, and what kinds of change, and how far changes of the various kinds are predictable in the absence of action; and consideration of possible lines of action for preventing undesirable, and bringing about desirable, changes, and of how far the results of the various kinds of possible action can be predicted...(*ibid.*: 272).

He goes on to discuss (1) the difficulty of determining what real socialist-appointed managers would actually do with regard to management and risk-taking under the circumstance of change and (2) the problem of choosing criteria for their decision-making (*ibid.*: 273). He concludes by writing the following:

The utter hopelessness of any such a task and the futility of attempting it in any detail – and hence the unfathomable presumption (if it is not sheer ignorance and simplicity) involved in passing any judgment about socialism in general – is the main point which this article is attempting to drive home (*ibid.*).

This statement seems easy to misinterpret. Knight is not writing that economics is incapable of informing the advocate of socialism of the problems he faces. Indeed, the context within which this

²²It is unclear why Knight chose this terminology. A more meaningful description might be that it is a problem of intersubjective uncertainty – the economist's uncertainty about the capacities of others to perceive ends and means and to achieve goals.

²³That he would use the term "stationary economy" to refer to these conditions is evident from his discussion of Oscar Lange in a footnote (*ibid.*: 285n).

passage occurs suggests that such an interpretation is flatly wrong. He seems to be writing that socialists who claim that they achieve the goals that they claim they want to achieve by means of central planning have no way to demonstrate that this is possible. If this seems like a weak conclusion to Austrian readers, he proceeds next to give a much stronger one that only a misreading could mistake for being different from the conclusion reached by Mises and Hayek.

He ends his paper by describing three fallacies. The first is that under socialism, one individual could control another individual. He argues that because socialism aims to achieve the same efficiency as an enterprise system, it would have to permit people to earn more or less the same incomes. Therefore, the socialist leaders could not exercise control over what these people earn. And, by definition, it does not want to control what they consume (*ibid.*: 274-5). The second fallacy is that the possession of property is unrelated to freedom. If the government controls property yet the socialist goal of assuring freedom is taken seriously, people would still have to be free to make management decisions in order to achieve efficiency. In other words, they would still have to *control* the property. And they would still have to receive approximately the same remuneration. In short, although the socialist leaders could nominally own the property, they would have to turn control of it over to the managers and risk-takers. It follows that to administer the kind of property redistribution system that many socialists expect to occur under socialism would require a revolutionary change that could only be achieved with a system comparable to one used to fight a total war (*ibid.*: 276-282). The third fallacy is that “management activities” can be appropriately decided by the socialist leaders. In fact,

[t]he socialistic state would have no objective or rational basis for fixing the remuneration of managers, the indeterminacy of their value being proportional to the degree in which they exercised initiative. To secure a moderate degree of efficiency, along with adaptive flexibility, the socialistic state might well find itself compelled to revert to the enterprise principle of leaving the remuneration of all final management – i.e., of innovators – to be determined by results actually realized. If so, the last important economic difference between socialism and capitalism would disappear, and with it all chance for any approximation to economic equality (*ibid.*: 285).

It is this passage that demonstrates the similarity between Knight and the Austrians. And it is with respect to this passage that Knight discusses the central planning debate between Lange and Mises, coming down on the side of Mises, as pointed out in the body of this paper.

Appendix 2

Equilibrium and Growth in the Knight's 1930s Paper

In his 1930 paper, Knight writes that “[i]n economics we are concerned with equilibrium not as a state of rest but as a process in equilibrium, with a slower process forming the ‘given condition’ within which a more rapid one takes place and tends toward a moving equilibrium” (1930: 187). In nature, which is studied by the natural sciences, “the system never really is in equilibrium (‘moving equilibrium’) at any point; but its tendency toward such a state is the main feature to be made clear in a scientific description of it” (*ibid.*). In economics, the concept of a tendency toward equilibrium is only useful if it is reasonable to make the assumption that various conditions are fixed. These assumptions are reasonable only with respect to certain problems. In light of the fact that most economists are familiar with Marshall’s “runs,” one can express these conditions by referring to the conditions assumed in Marshall’s short run and long run (*ibid.*: 187-189).

In other words, Knight uses the concept of equilibrium in very much the same way as the Austrians. It is useful, he implies, because it helps one elucidate a tendency toward equilibrium. It is true that his main concern in this article is not with the “elucidation of the competitive market process.” Moreover, he does not write of entrepreneurial profit and loss. But one would be hard-pressed in light of his 1921 book to suggest that Knight is only concerned with equilibrium to the exclusion of the Austrian market process.

Knight continues by saying that “tendency-toward-equilibrium” analysis is patently not suitable for treating production (supply) over a longer period, which he defines as a “period of a few years.” Why? Because it “is impossible to give a rigorously accurate definition for either unchanging volume or unchanging character of economic life without departing so far from reality as to make the significance of the treatment dubious” (*ibid.*: 189). In his discussion he writes that “it appears to be

misleading rather than helpful to describe the growth of population as a tendency toward equilibrium" (*ibid.*: 196). He identifies one set of characteristics of the population as especially worthy of discussion: "knowledge and skill" and "coordination."²⁴ He concludes that it is difficult to see how an equilibrium analysis can be realistically applied to cases in which people invest in the production of these characteristics (*ibid.*: 197). In other words, because in reality people invest in human capital the outcome of which cannot be predicted by the economist, the idea of a tendency toward equilibrium is unsuited for dealing with what he calls long-run problems – i.e., the problems of "growth and change" (*ibid.*: 193).

He goes on to write about the interest rate as the return on investment. This, he points out, is usually treated incorrectly as a price that tends toward equilibrium like every other price. However, this treatment is defective partly because of the uncertainty (on the part of the economist) of the outcome of investment in invention and discovery (*ibid.*: 200). He concludes by saying that "the notion of a tendency toward equilibrium is definitely inapplicable to particular elements of growth..." (*ibid.*).

²⁴It is noteworthy that he refers to these as psychological traits (*ibid.*).

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