Knight's Theories of Socialism and Capital: A Critique of Boettke and Vaughn

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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 it, it is obvious that they also did not examine it carefully. Finally, the paper finds no justification for the claim that Knight differed from the Austrians on the definition or scope of economics. 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, the definition and scope appear pretty much the same. The claim that Knight's economics was, in general, only concerned with competitive equilibrium is false.

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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, the analysis of socialism presented by the two "camps" was quite similar. In the case of capital, 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 and the neo-Austrians later failed to recognize this. That 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 when, four years later, the 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. This construct, which was used by both camps, is an invaluable aid in dealing with the complexity of real market economy interaction, as shown below.

The author writes about the "thrust" of BV's paper. This thrust differs from the more reserved claims that BV make for their article. As they see it, their goal is to show that Knight's notion, or definition, of economics is narrower than that of the Austrians. It should be evident to the readers of this journal that the most direct way to show this is to go directly to statements about the

nature and scope of the field.[1] But BV take a different route. 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. They compare this with what they regard Knight's narrowness due to his neglect of these. However, they mistakenly think that they can identify Knight's alleged narrowness by referring to his capital theory. In doing this, they make the error of confusing simplifying assumptions with narrowness. If a teacher employs a demand-supply equilibrium model to teach his students, this does not show that she is narrow. Whether she is narrow depends on the purpose for which the model is used. It is argued below that BV do not recognize Knight's purpose.

This paper evaluates BV's report of the difference between Knight and the Austrians on socialism and on capital and interest. First, the paper aims to show that the judgments made by the Knight and the Austrians about whether central planning could achieve specified results were similar and based on remarkably similar analysis. The two camps defined socialism differently. However, once we take this into account, the analysis is similar. Second, the paper 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, which is the implication of BV's paper; they represent an effort to escape the bounds that the Austrians, along with marginal productivity theorists, excepting J. B. Clark, had imposed on this subject.

In the author's view, this escape was ultimately successful, although Knight made a number of early attempts that were obviously not successful. Knight ultimately presented a capital theory that could have greatly expanded the Austrian theory of value and cost, if the Austrians had understood it. At the same time, Knight did not appreciate the main concern of the Austrians. That concern had nothing specifically to do with capital goods, in spite of Hayek's statements that appear to contradict

[1]Such an approach may not yield a clear answer. Although Mises defines the scope and method of economics clearly, Knight does not. However, among the appropriate works to consult are Knight 1921, 1924, 1930, 1940b, and 1951.

this. And it was only indirectly related to the numerous Austrian and neo-Austrian statements to the effect that their goal is to understand capital goods in disequilibrium. It was ultimately about the monetary intervention that mainly biases the market rate of interest's transmission of messages relating to praxeological time preference.[2] This bias could cause a trade cycle. This ultimate concern had nothing to do specifically with capital goods but with the signaling that is relevant to *all* factors of production.[3]

This paper begins in part 1 by describing BV's statements about Knight's theory of socialism and then assessing them in light of Mises's 1940a paper. Part 2 presents Knight's theory of capital and interest; it then assesses BV-s claims about it. 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. As they see it, although Knight believed that socialism was "fraught with economic inefficiencies," he argued that "economics could provide no theoretical critique" of it (BV: 156-7). The problems of socialism are of a *political* nature, he asserted. 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

[2]Throughout 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.

[3]As an aside, the propensity of most modern neo-Austrians to write about capital goods as opposed to all factors of production contradicts Carl Menger's definition of capital (Menger 1981: 155 and Appendix E).

this alone is sufficient to warrant a rejection of socialism (*ibid*.: 156-7).[4] Moreover, since the rejection of socialism is possible only by someone who understands the subtleties of the market economy (the market process), the Austrians believed that the analysis of socialism lies inside the boundaries of economics.

Knight's 1940a Paper

We take Knight's views on socialism 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 paper is described more fully in Appendix 1, which contains references to the page numbers of the original text.

To Knight, socialism meant the implementation of a system that would *duplicate the market economy more or less down to the last detail*. So he tried to conceive of what the socialist planners would have to do in order to achieve this implementation. He began with the image of a stationary economy. In order to only maintain a stationary economy, he argued, socialist planners would have to have markets for consumer goods. The planners 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 products they would have received if they were in a market economy. Moreover, as Knight saw it, the socialists valued individual freedom. Their vision of the system would have to leave individuals free to choose both the mix of consumer goods they wanted and their jobs. The fundamental point he made about the prospect for achieving this goal is that the rewards to factors in the market economy are determined by residual claimant entrepreneurs

[4]It is worth noting that in describing Knight's position, BV seem to conflate central planning with socialism. This would probably be the best way to present the Austrian position since the Austrians equated socialism with a central planning problem. However, as we shall see, 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.

who take risks.[5] He could not imagine how, even if socialist leaders could somehow duplicate all of the other characteristics of the market economy, they could devise a system that would duplicate the entrepreneurship entailed in the actions required to determine and then act in accord with the market economy marginal products (*ibid.*: 285).

Knight and the Austrians Compared

Compare this image of the socialists' goals with that of the Austrians, as reported by BV.[6] They say that to Mises, socialism means the elimination of private property. Yet, without private property, 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).

There appears to be a wide difference between the socialism about which Knight wrote and that which BV depict as the Austrian concept. Correspondingly, it might seem that their goals were also quite different. On the other hand, their evaluations of the possibility of central planning were very similar. Indeed, Knight recognized this when he wrote the following passage in a footnote toward the end of his paper.

> 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. This is most likely because Knight regarded the

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

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

whole exercise as rather silly. After all, he recognized that the stationary equilibrium is a fiction to begin with. In spite of this difference, which in the author's view is mainly a difference in approach or terminology, it seems evident on balance that Knight's writings about socialism do not support BV's thesis that the two camps differed significantly in their judgments about the prospects for successful central planning.

Why Did Knight Say That the Central Planning Problem Was Political?

So why, one might ask, did Knight say that the problem is political while, according to BV, the Austrians said it was economic. Since Knight and the Austrians did not debate each other over socialism or central planning, the answer must be speculative. One possible answer is that economics assumes the existence of private property. Knight would not have regarded statements about a system that lacks private property as being "economic."[7] A second answer is that Knight tended to be agnostic on the question of what another person could achieve. A mainstay of his approach to economic policy is the assumption of rigid intersubjective uncertainty. He is willing to speculate about others' ability to achieve goals, but he did not regard such speculation as within the province of economics.

The third answer, which emphasizes a more fundamental difference between Knight and Mises, is based on the way that they conceived of applying abstract economic theory. Both writers asserted that abstract economic theory is pure logic.[8] Mises applied this logic by focusing on arguments for and against market intervention (Mises 1966: 882-5). Thus his evaluation of socialism was an evaluation of the argument that central planning can achieve the goals of the central planners,

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[7]Knight's economics always starts by considering a stationary economy. Without the assumption of private property, the conditions of a stationary economy would be completely irrelevant to any further application of this starting point. [Note: For the author to say that the stationary economy is the starting point of Knight's analysis is the same as saying that the demand-supply model is the starting point of market analysis. It does not imply that Knight was an equilibrium theorist any more than Hayek's use of this concept or Mises's use of the evenly rotating economy would imply that they are equilibrium theorists.]

[8]In Mises, this is evident from his discussions of praxeology. In Knight, see his note on p. 261-2 in his paper on socialism.

given that there are no private property rights in factors of production (Kirzner 2001: 173). Since the existence of markets depend on private property rights and since the determination of the rates of substitution among resources require markets, central planners have no way to determine the rates of substitution as among factors of production. Thus, socialism is refuted by the logic of economics.

Knight argued that to apply the logic of economics to cases in the real world, one had to make judgments about how real actors would behave under the circumstances of that real world. From his point of view, the logic of economics is bounded.[9] To examine arguments that are outside the boundary requires what he called political and/or psychological judgments. Oscar Lange and Abba Lerner provided the mathematical solution to the problem that central planners would face (1) in allocating known factors of production to known potential uses and (2) in distributing consumer goods.[10] But a mathematical solution is only a means of communicating economic theory. The fact remains that to apply economic theory, one must make judgments about the real actors to whom such theory applies. As Knight saw it, such judgments belong in the province of politics or psychology.

At first it appears that Mises and Knight were able to reach nearly identical conclusions on central planning yet express what appear to be profound differences on the scope of economics. Yet closer examination shows that the main difference was in the way the two applied the logic of economics. Mises saw the contradiction between the claims of central planners that they could plan an economy and the absence of the private property rights that would be necessary for an economy to exist. How could the planners plan for something about which they could not form a conception? He regarded this reasoning as an application of economics. Knight saw the claims that central

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[9]This is not meant to imply that Knight regarded the boundary as mathematical or that he maintained that economics is a logic based on behavioral assumptions only, as one might think from reading BV. The issue here is more complex. The "boundary" is an imagined dividing line between the propositions that are derivable in a pure logic of action as applied to economic problems and the propositions that lie outside that pure logic ("meta-theoretical" propositions, as it were). This imagined dividing line is in the mind of the economist and can be identified only through discourse. Had Mises and Knight debated socialism, perhaps they would have engaged in such discourse and reached complete agreement.

[10]Knight 1940a: 260-1n. This is not meant to suggest that Knight did not regard a kind of market process as part of the logic of action. Knight regarded the actions needed to establish a stationary equilibrium as a legitimate part of economics, as indicated by his paper on statics and dynamics (Knight 1930: 185-189).

planners could, in the absence of a market economy, duplicate the entrepreneurial decisions that would occur under the market economy conditions (including a reasonably complete private property system) as pure speculation. To show the absurdity of central planning, he only had to present some detail about the complexity of the decisions. Suppose that, after having understood the complexity of the decisions they would have to duplicate, the advocates of central planning asserted that they could indeed duplicate them. In thinking about this, Knight asserted that they would be making a judgment that is not part of economics. Accordingly, Knight, the economist, saw no reason to argue against the judgment.

Did Knight and the Austrians Have Different Notions of Economics?

In spite of the difference between Mises and Knight on how they dealt with central planning, it is not clear to this author whether or not the Austrians, or at least Mises, had different notions of economics. BV base their conclusion that they do have different notions partly on an incomplete understanding of Knight's definition of socialism.[11] But they do not seem to appreciate the writings of Mises on this subject. Mises used both a broad and narrow definition of economics. The broad definition seems to have made it equivalent to praxeology, which he defined as the general theory of action under all conceivable conditions (Mises 1966: 32). The narrow definition was more restrictive. He writes;

> All that can be contended is this: Economics is mainly concerned with the analysis of the determination of money prices of goods and services exchanged on the market....The field of catallactics or of economics in the narrower sense is...the analysis of those actions which are conducted on the basis of monetary calculation (*ibid*.: 234).[12]

[11]Insofar as their conclusion is based on differences in capital theory, this is discussed in part 2 of this paper.

[12]In another part of his text, Mises describes economics in somewhat broader terms. He writes that "[e]conomics is essentially a theory of that scope of action in which calculation is applied or *can be applied if certain conditions are realized*" (*ibid*.: 199, italics added). It is not clear whether the italicized part of this phrase indicates that he has socialism in mind.

He goes on to write that the market economy assumes private ownership of the means of production (*ibid*.: 237). Later in the same text, he describes economic interaction in a situation in which private property rights is incomplete. Still later, he discusses only one system in which private property is completely absent: socialism.

His discussion of socialism begins with a statement regarding the *praxeological* analysis of its problems, not an *economic* analysis. He points out that the analysis of socialism "refers only to the means by the employment of which the ultimate ends chosen are to be attained." But then he writes that "[o]ur problem, the crucial and only problem of socialism, is a purely economic problem, and as such refers merely to means and not to ultimate ends" (*ibid*.: 696-7). He does not tell his readers whether he is using the broad or narrow definition of "economic."[13]

If Mises does not tell us directly, perhaps we can infer whether he meant for economics in this passage to be defined in the broad or narrow sense. The main problem with socialism, as Mises sees it, is the problem of making economic calculations. BV say something like this also. Mises has already written that economic calculation requires prices and markets. Yet prices and markets cannot exist without private property. If this is so, one could hardly critique a system that lacks private property from the narrow economic point of view. Surely, it appears that the main problem he identifies – the inability to achieve the ends with the means that are proposed – is economic only in the broader sense. If this is true, one would be hard-pressed to find another economist outside the Austrian or neo-Austrian schools who would call such a problem economic. It follows that to say in a history of economic thought journal – and on this basis alone – that Knight's notion of economics is "rarified," at least in relation to Mises, is surely an abuse of the word "rarified." Of course, this is not the only basis on which BV draw their conclusion. They also analyze Knight's capital theory, as described below.

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[13]That Mises did not sufficiently distinguish between praxeology and economics is also pointed out by Allen Oakley's penetrating review of Mises's works. See Oakley 1999: 49-52.

There Really Is a Difference

In the author's view, there is an important difference between the two camps on central planning. Mises, at least, emphasized the impossibility of calculation due to the absence of private property, as BV point out. In this respect, it can be argued that Knight's assessment of socialism was more narrow than that of the Austrians. One might even go on to claim that Knight's failure to identify the calculation problem was due to his neglect of the link between private property, money and prices, and economic calculation. But this is not the difference that BV claimed.

Creating Human Capital as the Main Problem of Central Planning

One last point needs to be made before discussing the capital debate, since we will see that it reflects a consistency in Knight's later thought that, to the author's knowledge, has heretofore escaped notice. In his conclusion, Knight discusses what he regards as the most fundamental fallacy of the socialists. It is

> to think of the problems of large-scale social organization – and specifically of large-scale economic organization – in terms of the relations between given individuals...[T]he problem is rather that of creating or producing the right kinds of individuals. Given individuals with the requisite endowment of capacity and disposition, the general principle that freedom is the only basis of ethically defensible relationships among men and the essential condition of all moral or personal life calls for leaving such individuals to work out and establish such relations as they themselves deem most conducive to economic efficiency, to personal and cultural well being, and in general to their mutual advantage in their pursuit of the good life (Knight 1940a.: 288-89).

In this passage, insofar as he is referring specifically to "large-scale economic organization," Knight is writing, in effect, that the problem of socialism is that of causing the right mix of what we would today call human capital within the large-scale firm to be created. Thus the bottom line, so to speak, is the human capital mix. We shall see that this is also the "bottom line" of his theory of capital and interest.

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. The paper argues that 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 and interest theory *in its final form* was actually a theory of endogenous economic growth based on *new* investment.[14] 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. 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.[15] 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 capital and interest theory in its final form. This requires some amount of extrapolation because the 1944 paper was not directly about interest, but about whether there would be long-run diminishing returns. However, "returns" in this phrase means

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[14]It 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.

[15]We find a similar use in a paper by Romer. Romer writes: "One simple way to make the static model into a growth model is to allow for the accumulation of the primary resource Z, which is now interpreted as a durable, general purpose capital good" (Romer 1987: 60).

the same thing to Knight as the long run rate of return on investment, which he regarded as the dominant determinant of the rate of interest outside the stationary equilibrium. Next we assess BV's claims about Knight's theory.

The Theory in a Nutshell

Knight's theory of capital and 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 the outline, we shall use the more modern term human capital instead of the term knowledge of the productive factors, which was used by Knight.[16] 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.[17] 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 self-perpetuating, given the various assumptions that we make in building

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

[17]Strange 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.

the image of the stationary economy. Material capital needs maintenance, but technical human capital does not.[18]

It is not possible to know the return on investment 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 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:

[18]Or, 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.[19] 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 changes in human capital.[20] 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

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[19]There 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). This paper is discussed in Appendix 2.

[20]Both 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 which, in theories of the market process, are assumed fixed. 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 even 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).[21]

[21]We 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).[22]

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.[23] 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 such self-maintaining 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:

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[22]The 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.

[23]This 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 an explanation of 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 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 to provide a means for distinguishing between what we do know and what we do not know. Knight's ultimate aim is to discuss the "pure theory of investment," which is largely about what we don't know. He uses the Crusonia plant 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. In the latter paper, he took a less definite approach. Although growth happens, he maintains, 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 theory that Knight presented before his 1944 paper*.

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.[24] It may be worthwhile to state more precisely the problem with which Knight's 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.[25]

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[24]Although 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).

[25]Knight 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.[26] It would also exist in a stationary economy. The important point is that a rate based on this consideration yields absolutely no information that is relevant to investment in *new* capital goods. Time preference theory deduces 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.

One who holds the time-preference theory might respond 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 for Knight 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*. Does it cause consumer-savers to loan more than they would if it weren't for the high expectations of profit. The Fetter-Mises theory of interest explains why there is a rate of interest and why it is not higher or lower than it is. But Knight was interested in how entrepreneurial expectations can cause it to be even higher than it would be on the basis of time preference alone.

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 implicitly that the rate of interest in

[26]See, for example, Israel Kirzner (1976) and Laurence Moss (1978).

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.[27]

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 incorrect 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 one assumes that they could, Knight argued, they could not duplicate the

[27]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, the neo-Austrians 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).

entrepreneurial investment decisions. 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 BV 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 the *assumption* of ideal conditions. 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 are alleged to have 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.[28] Since BV show not recognition of such a distinction, they cannot have grasped his theory of investment and capital.

[28]It 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.

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."

> …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).

I 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. However, Knight's theory of investment is not captured by the image of a progressive society (a growing economy). To see where the investment theory fits, it is necessary to focus on the uncertainty of entrepreneurial decisions. This uncertainty implies that virtually every investment decision leads to new human capital that did not exist before. The rate of growth of the value of such new human capital must be regarded by the subjectivist as unknown.

Did Knight Have a "Fundist" Theory of Capital

It is worth discussing 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 presented his theory of growth by referring at the beginning to 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. For Knight, the human capital part of this fund is perpetual. The same fund self-reproduces. So it is not wrong to say that Knight referred to capital as a fund. However, this is not the end of the story. It is only the beginning. Knight did not *believe* that such an identifiable fund exists in the real world. At the same time, he believed that it was necessary to refer to such a fund in order to make his more complex points about the nature of entrepreneurial investment. To claim that Knight had a fundist theory of capital is simply wrong and irresponsible in light of his 1944 article.

Did Knight Deny a Role for Time Preference?

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 article shows at least the beginning of a theory that would become more mature in Knight's later writings. 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 the difference between action in the stationary economy and action outside of that imaginary construction. Correspondingly they did not appreciate 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.[29]

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 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 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.[30]

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

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[29]Oddly, 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).

[30]One 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 this paper can dispel the 60 years of Austrian myth about Knight's Crusonia plant.

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 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.

Did Knight deny that time preference had any role in the determination of interest. The fact is that neo-Austrians have used two versions of time preference. Knight acknowledge this in his early review of the German version of Mises's *Human Action*. He regarded the first view - the view that individuals demand some satisfaction in the near future and some in the more distant future – as trivial.[31] And he regarded the second view – that a positive market rate of interest is implied by the existence of time preference – as wrong. Some neo-Austrians subscribe to the view that time preference is positive. But Mises did not, as I have argued elsewhere (Gunning 2005).[32] B-V do not say whether which theory of time preference they have in mind.

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[31]See Knight 1941:411. He would have been wrong in this if he thought about its usefulness in the monetary theory of the trade cycle under stationary conditions. But chances are that he was not thinking about this. In any case, the issue here is capital and interest theory, which Knight related to his theory of economic growth. The stationary economy assumption is just stepping stone toward comprehending how interest and capital are related to growth.

[32]This has more recently been acknowledge by some neo-Austrians. See Block et. al. (2006).

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 increase human capital. Because of the nature of knowledge, this increase would be permanent and would not require maintenance. 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 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. Sadly, the early neoclassical economists like Knight had much more in common with the Austrians than the neo-Austrians want to acknowledge.

Appendix 1

Knight on Socialism

A close reading of Knights 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 b]e 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 an 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.[33]

This ends Knight's discussion of the problem faced by socialist leaders who aim to duplicate *a stationary economy.*[34] 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 a 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 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 of 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

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[33]It 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.

[34]That 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."[35] 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*.).

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

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