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# Contrasting Concepts of Capital: Yet Another Look at the Hayek-Keynes Debate

**Steven Horwitz***
St. Lawrence University

**Abstract**
I argue that the economics of Hayek and Keynes diverges most significantly not with respect to policy but in their understanding of the role of capital in a market economy, and how capital relates to issues of savings and investment. Specifically, Hayek's Austrian conception of capital provides a different, and very disaggregated, vision of the market process that can help identify the flaws in Keynesian theory and policy. Hayek's view of capital forces the economist to consider the microeconomic foundations of macroeconomic phenomena in a way that validates Hayek's complaint that Keynes's aggregates conceal the fundamental mechanisms of change.

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## I. Introduction

The Great Recession of recent years has rekindled an economic debate that first erupted around 80 years ago between future Nobel Laureate Friedrich Hayek and Lord John Maynard Keynes, perhaps the most important economist of the 20th century. From thousands of pages of text in academic journals, popular magazines, and online, to a rap video that has been seen by more than 2 million viewers, this round of the Hayek-Keynes debate is, quite plausibly, even larger-scale and more intense than the original. Much of the current conversation has focused on the ways in which the two thinkers' visions of the economy were so different and thereby led to very different policy conclusions. The general idea is that Hayek had much more confidence in the self-correcting powers of markets while Keynes was more focused on the ways in which those processes could break down. In turn, the Hayekian perspective on recessions

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has seen the boom that precedes the bust as being the period that deserves the most attention, as it is there that government manipulation of the monetary system leads to intertemporal discoordination and the mistaken investments that are eventually revealed as the boom turns to bust. Keynesians, by contrast, have devoted their energy to the bust phase of the cycle, perhaps unsurprisingly as Keynes's *magnum opus* was written and published during the very depths of the Great Depression.

Although these differences are certainly real and meaningful, they only scratch the surface of what I will argue is the most fundamental difference between Hayek and Keynes. To understand why they disagreed on the degree to which markets were self-correcting and therefore the degree to which governments were needed and able to improve on the outcomes markets produced, we need to get behind the broad visions of self-adjustment and the role of government to their actual economics. Here too, much has been written about the very different approaches to what is now known as macroeconomics that can be found in each thinker's work. However, the differences are unlikely to be found at the level of, say, the Austrian business cycle theory as such versus the Keynesian income-expenditure model as such. Those "macro" models rest on very different visions of the underlying *microeconomic* processes. Each thinker's view of the stability of the macroeconomy is really a reflection of how each understood the coordination processes of the microeconomy. More specifically, I will argue that it is how each thinker understood, or failed to understand, the role of capital in the market economy that is at the core of their contrasting visions of the economy as a whole. These contrasting conceptions of capital are crucial for their understanding of the broader issue of whether the market is capable of generating intertemporal coordination or whether it is prone to systematic failures. Keynesianism has long believed the latter, and I will argue that Keynes's flawed view of capital can help to explain why, as well as why his view of intertemporal coordination is mistaken. Finally, I will look at how these views of capital contribute to how Hayek and Keynes saw the business cycle and especially policy during the bust phase.

## II. The Austrian Conception of Capital

The concept of capital that underlies Hayekian approaches to the boom and bust has to be understood within the broader context of

the Austrian school out of which his work emerged. Austrian capital theory begins where the Austrian school began, with Carl Menger's (1981) *Principles of Economics*. Specifically, it is Menger who delineated the difference between goods of the "first order" and goods of the "higher orders." First-order goods are those devoted to the direct satisfaction of consumer wants. Goods of the higher orders are those that contribute to the making of first-order goods. The piece of bread I eat for breakfast is a first-order good, while the flour, eggs, milk, etc. that went into making it are second-order goods. The inputs that went into making the flour or the milk (e.g., the milking machines at the dairy where the milk was produced) are third-order goods, and so on. For Austrians, capital can be understood generally as any input that contributes to the production of a first-order good, either directly or indirectly. That is, capital is all of the goods of higher orders.

Another way of viewing the question of what makes something capital is to see it as a matter of function. Capital is what capital does: playing a role in the plans of entrepreneurs. This observation's importance is that the same good can be capital in one situation and not another. A ham sandwich would be a consumer good and not capital if I have prepared it at home for the purpose of direct consumption. However, if I had taken that exact same sandwich, put it in a picnic basket, and then sold it in my store, it would be a capital good, as it is an "unfinished" element of my plan to sell complete picnic lunches. What makes the sandwich capital or not is its relationship to other goods and services and the plans of actors. It is *context* or, better yet, the place a good sits in the structure or network of production that determines its capital quality. The Austrian theory of capital denies that one can look at a good or service, or even a non-material asset, standing alone and determine whether or not it is capital. It is not the physical qualities of the good that make that determination but where it sits in the network of plans of actors. This is why Ludwig Lachmann (1956, p.4) continually refers to the *structure* of capital:

> It will be our main task in this book to study the changes which this network of capital relationships, within firms and between firms, undergoes as the result of unexpected change. To this end we must regard the "stock of capital" not as a homogenous aggregate but as a structural pattern. The

> Theory of Capital is, in the last resort, the morphology of the forms which this pattern assumes in a changing world.

This emphasis on relationships and unexpected change also highlights the dynamic nature of the theory.

Because being capital depends upon a good's location within a plan, it is possible, and quite likely, that the same good can serve as capital in more than one imaginable plan. Any single good has what Lachmann (1956, p.2) calls "multiple specificity," which is the quality of being used in multiple but not infinite uses. What is central for the Austrian theory is that capital is not homogenous; capital goods are not perfect substitutes for one another. Any given good can serve in only a limited number of production plans, and it is not possible to create any given production plan out of any capital goods. Goods are not infinitely substitutable, and not all goods have the requisite complementarity necessary to be part of any particular production plan. This emphasis on the "heterogeneity" of capital distinguishes Austrian capital theory from many of its predecessors, especially those, most obviously Knight's "Crusonia plant" or Solow's "shmoo," that viewed capital as a homogenous fund of resources from which equally useful "ladles" could be applied to any production process.

Recognizing that capital is heterogeneous in this way suggests the importance of the complementarity and substitutability of capital. When viewed as part of a production plan, the various capital inputs must "fit together" in order for that plan to be executed. How well various capital inputs can be fit together in this fashion is their degree of complementarity. What entrepreneurs do in constructing their plans is to integrate complementary capital inputs. In the mind of the entrepreneur at the moment the plan is put in motion, the various capital inputs are all in a complementary relationship to one another. Substitution, by contrast, is a feature of capital goods when we consider dynamic change. The plans of entrepreneurs are always constructed in a world of uncertainty and may fail to play out as intended. When plans fail to one degree or another, entrepreneurs may choose to reshuffle their capital inputs and formulate a new plan. At this point, the central question is the degree to which one capital good can substitute for another in the plan. The substitutability of capital is what matters when change is necessary.

What guides this process of plan formation, deconstruction, and reconstruction is monetary calculation. In a market economy where capital goods have money prices, those prices enable entrepreneurs to prospectively formulate budgets and retrospectively calculate profits and losses. Budgets based on those prices are what enable entrepreneurs to decide which capital goods will effectively serve as complements in an integrated production plan. After that plan has been executed, profits and losses signal owners of capital whether or not the plan was successful, which enables them to decide whether the uses of capital were, in fact, sufficiently complementary to continue. If not, then the money prices of other capital goods provide the information necessary to engage in another round of calculation and budgeting to see what sorts of capital goods might serve as substitutes for pieces of the failed plan.

The process of entrepreneurship and monetary calculation is one of constant plan creation, execution, and revision, with the corresponding consideration of the complementarity and substitutability of the capital inputs into those plans. The result of this ongoing process is the production of a capital structure that is an unintended consequence of the various decisions being made by entrepreneurs. Although each individual entrepreneur is consciously and intentionally fitting together complementary capital items into production plans, the degree of integration and complementarity in the capital structure of the economy as a whole is an emergent outcome of the interplay between intra-plan complementarity and inter-plan substitution.

In this Austrian vision, the economy is something like a large jigsaw puzzle with capital goods serving as the individual pieces and no final picture to guide the various independent efforts to create a meaningful image. For Hayek and the other Austrians, those pieces are each uniquely shaped though still able to interlock with some finite number of other pieces to form a potentially meaningful pattern when joined in the right ways. If we further imagine that the jigsaw puzzle "tells" us that we have joined pieces together correctly by emitting a pleasurable sound when we do so and a very unpleasant one when we do not, we have a fairly good analogy to the market. Those beeps serve as the analog to profits and losses and help to guide all of us trying to, each working our own area, construct this puzzle without a picture to guide us. From this perspective, the capital structure and the process of monetary calculation that drives it

is the fundamental coordinating process of the market economy. Fitting those pieces together as correctly as possible, in response to knowledge and incentives produced by the pleasurable and unpleasurable beeps of profit and loss, is what ensures ongoing economic coordination and growth. Capital is central to the idea that markets do not require outside intervention to be sufficiently coordinated.

## III. Capital in Keynes

Keynes's conception of capital could not have been more different. In general terms, Keynes treated capital as either an undifferentiated aggregate, seeing capital as part of the broader "factors of production" in *A Treatise on Money* in 1930, or in terms of capital assets to be invested in *The General Theory* in 1936. In many ways the problem is that Keynes does not really have a theory of capital in the sense that Hayek and the Austrians use the term. As Hayek points out in his review of the *Treatise*, what Keynes was doing in that book was trying to tell a Wicksellian story about investment, savings and the price level but without the Austrian (via Bohm-Bawerk) theory of capital on which Wicksell's original argument rested. Specifically, Hayek (1995a, p.125) argues that Keynes's treatment of the process by which current output is produced is flawed precisely because he views that process as "an integral whole in which only the prices paid at the beginning for the factors of production have any bearing on its profitableness." In other words, Keynes does not recognize that production comes in stages and capital goods sit in specific places in that staged process, or, in Menger's terms, that capital goods can occupy different orders in the structure of production.

Keynes argues as if changes in investment are sufficient to explain changes in the production process because of their effects on the aggregate capital of the community. Compared to the Austrian focus on the underlying adjustment processes among the stages of production and the specific capital goods that occupy them, Keynes is operating at too high of a level of aggregation at which he cannot distinguish among those stages of production. As Hayek points out, it is changes in the price differential between goods in those different stages (i.e., goods of different orders) that determine the flow of resources in the production process. Keynes's "neglect" of the "possibility of fluctuation between these stages" is what Hayek sees

as leading him to trouble in his discussions of the role of investment and his understanding of "macroeconomic" phenomena. This is the context for one of Hayek's most quoted lines about Keynes, which comes from Hayek's (1995a, p.128) review of the *Treatise*: "Mr. Keynes's aggregates conceal the most fundamental mechanisms of change." From an Austrian perspective, it is the disaggregated structure of capital and the movement of resources and specific capital goods, and the labor complementary to them, among the various stages of production that is the foundation of any understanding of larger-scale "macroeconomic" changes.[1]

Keynes's aggregative view of capital is also clear in a brief footnote in *The General Theory* that discusses the work of Frank Knight. Hayek and Knight had long sparred over their own contrasting conceptions of capital, with Hayek strongly criticizing the Knightian view that capital was best understood as an undifferentiated, homogenous aggregate out of which "dollops" could be applied to the production of particular consumer goods. This was quite the opposite from the Austrian view of capital as differentiated, heterogeneous, and embodied in specific goods. In the chapter on "The Classical Theory of Interest," Keynes (1936, p.176) footnotes approvingly a 1932 article of Knight's that Keynes claims "confirms the soundness of the Marshallian tradition as to the uselessness of the Bohm-Bawerk analysis." In the appendix to that chapter, Keynes has an explicit discussion dismissing Mises and Hayek's theory of interest as linked to the relative prices of capital goods and consumption goods. Keynes admits that "it is not clear how this conclusion is reached" and tries to reconstruct the argument. He eventually accuses Mises of "confusing the marginal efficiency of capital with the rate of interest" (1936, p.193). However, the concept of the "marginal efficiency of capital" would have been foreign to the Austrians precisely because treating capital as a whole that has a "marginal efficiency" ran against their conception of the capital structure. The question is always about the value productivity of specific assets given their place in the structure of production.

This overly aggregated concept of capital and its inability to see movements among the stages of production poses another problem

[1] Hence Roger Garrison's (2001) apt description of the Austrian school as having a "capital-based macroeconomics," particularly in contrast to the "labor-based macroeconomics" of Keynes and contemporary schools such as Monetarism and New Classicism.

for Keynes. It makes it difficult for him to understand how capital can lose value without a change in its physical character. In the only real mention of the Austrian view of capital in *The General Theory*, Keynes (1936, p.76) says:

> It seems probably that capital formation and capital consumption, as used by the Austrian school of economists, are not identical either with investment and disinvestment as defined above or with net investment and disinvestment. In particular, capital consumption is said to occur in circumstances where there is quite clearly no net decrease in capital equipment as defined above. I have, however, been unable to discover a reference to any passage where the meaning of these terms is clearly explained. The statement, for example, that capital formation occurs when there is a lengthening of the period of production does not much advance matters.

Keynes's dismissiveness aside, this passage reveals much about the differences in approaches. Keynes seems puzzled by the Austrian claim that capital can be "consumed" even though there is no net decrease in physical capital. The answer to the puzzle is that capital, for the Austrians, is about value, not about the physical object itself. If we build a machine in anticipation of some specific future demand and then discover our expectations were wrong, the machine will drop in value (which is a form of capital consumption), but it does not crumple into dust. Capital goods are valued in terms of the (discounted) value of the future consumption goods they will produce. If consumer demand changes, the value of the capital good changes (assuming it is insufficiently versatile to produce whatever new product is now in demand) and capital value is lost, thus capital has been consumed even though the physical stock of capital has not changed. This point will be important in our later discussion of the business cycle.

Keynes's discussion of capital in the "Concluding Notes" chapter of *The General Theory* demonstrates a very different view of it than that held by the Austrians and many others. In this chapter, he brings together several themes of the book to argue that good policy necessitates more social control over the level of investment and the rate of interest. In particular, because he believes "there are no

intrinsic reasons for the scarcity of capital" and that "interest today rewards no genuine sacrifice," there is no reason not to use monetary policy and state management to ensure "the growth of capital up to the point where it ceases to be scarce" (1936, p.376). Keynes believed that the state needed to "determine the aggregate amount of resources devoted to augmenting the instruments and the basic rate of reward to those who owned them" through the socialization of investment. Here Keynes sees no connection between relative prices of different orders of goods, not to mention the profit and loss signals of the marketplace, and the efficient allocation of capital. Only by believing that the problem is inherently an aggregate one and by ignoring the microeconomic structure of capital could Keynes be led to this view. For the Austrians such as Hayek, capital was intricately connected with the process of economic calculation that required private ownership, exchange, and money prices (Mises, 1920). In Hayek's view, Keynes radically misunderstood the nature of capital and its role in a market economy.

A few years after *The General Theory* appeared, Hayek was highly critical of just this part of the argument. He claimed that Keynes had provided an "economics of abundance" in which the scarcity of capital goods was irrelevant because he had ignored the relative price mechanism, preferring instead to treat the value of capital only as a discounted flow of future services based on a monetarily determined rate of interest. In such a world, sufficiently expansionary monetary policy could reduce interest rates so low as to make capital seem abundant. As Hayek noted (2007, p.343):

> It is clear that if we want to understand at all the mechanism which determines the relation between costs and prices, and therefore the rate of profit, it is to the relative scarcity of the various types of capital goods and of the other factors of production that we must direct our attention, for it is this scarcity which determines their prices.

He followed that by noting that scarcity in this context can be understood as referring to a good where an increase in demand will increase its price. Even if one, as Keynes does, assumes idle resources, on the Austrian view of capital, not every idle resource is a perfect substitute for another, thus the very heterogeneity of capital makes individual capital goods scarce. Hayek's clear implication is

that Keynes was seriously mistaken about the nature of capital and its importance in generating economic coordination.

In his later years, Hayek was quite explicit about his view that Keynes knew little to nothing of capital theory. In a piece written in 1966 looking back on the Keynesian Revolution, Hayek (1978, p.285) said, "I don't think he had ever thought systematically on the theory of capital," adding that Keynes's "assumption that all goods and factors are available in excess makes the whole price system redundant, undetermined and unintelligible." (1978, p.286) And 17 years later, in 1983, Hayek (1995b, p.249) wrote that Keynes and other economists of the Cambridge tradition did not seriously consider "the Mill-Jevons theory of capital, later developed by Bohm-Bawerk and Wicksell." He also noted that "an elaboration of the still inadequately developed theory of capital was a prerequisite for thorough disposal of Keynes's argument."

One final observation that Hayek (1978a, pp.284–85) made in the 1966 essay was that Keynes was hampered in his understanding of economics, and capital theory in particular, because his command of German was very weak. One example of this point is that Keynes reviewed Mises's *The Theory of Money and Credit* shortly after it was published and clearly did not understand Mises's argument because, Hayek implies, his German was simply not sophisticated enough. More generally, "what had been achieved by Walras and Pareto, the Austrians and the Swedes, was very much a closed book to him." Given the centrality of capital theory to these Austrian ideas and given how the Austrian approach differed from other theories of capital, Keynes's weaknesses with German might well explain why he had trouble, as noted above, in grasping what it was all about. It also explains how in the *Treatise* Keynes could make use of a broadly Wicksellian perspective that was lacking Wicksell's own foundation in Bohm-Bawerk's theory of capital.

## IV. Contrasting Visions of Intertemporal Coordination

Austrians such as Hayek have long argued that one cannot understand why an economy goes into recession without first understanding how economies work when they are healthy. With that understanding, Austrians tend to look for disruptions in the processes that normally keep an economy "healthy" as a way to explain how they might get sick. More specifically, they look for explanations of recessions or "busts" by asking if the bust was

preceded by a boom. A boom is not a necessary condition for a recession, but it is sufficient, and Austrians argue that a preceding boom is the most frequent cause of a bust. Key to understanding that boom-bust cycle is how the capital structure gets distorted in the boom, which also helps in understanding how Austrians view the bust.

One of the fundamental differences between Hayek and Keynes was the question of whether markets were capable of generating intertemporal coordination on their own. Hayek and the Austrians were working from a classical loanable funds theory of the interest rate. On this view, the interest rate was the price of time, emerging from the supply of loanable funds from savers and the demand for loanable funds by investors. Should the public wish to save more, this would increase the supply of loanable funds and push down the interest rate, encouraging more borrowing/investing to make use of that new savings. The loanable funds theory was consistent with the self-adjustment of markets in that it implied that any reduction in expenditures coming from additional savings would be counteracted by the new investment spending that savings made possible. In contemporary terms, the Consumption and Investment terms of total income traded off against each other to keep total income stable even as people's savings preferences changed. Hayek also saw this process as maintaining intertemporal coordination as the lower time preferences of savers were matched by the lengthening of production processes and the investment in higher-order capital goods that the resulting lower interest rate and larger quantity of loanable funds supplied made possible.

Keynes, in contrast, denied that there was such a nexus that coordinated savings and investment. In *The General Theory*, Keynes (1936, p.21) wrote:

> Those who think [that an act of individual saving inevitably leads to a parallel act of investment] are deceived… They are fallaciously supposing that there is a nexus which unites decisions to abstain from present consumption with decisions to provide for consumption; whereas the motives which determine the latter are not linked in any simple way with the motives that determine the former.

Later in the book he identifies these motives and why they are not linked. As is still part and parcel of the simple Keynesian income-expenditure model today, savings is argued to be a function of income via the marginal propensities to consume and save, while investment is argued to be a function of entrepreneurial expectations, or the so-called "animal spirits." The motives that determine each are completely distinct, unlike the Hayekian conception in which the interest rate serves as the nexus that brings investment and savings together. With savings and investment cleaved in this way, Keynes can also show that the Consumption and Investment components of total income can move in the same direction.

This element of the Keynesian vision helps to understand why Hayek argued that Keynes had not understood what Hayek called "Mill's Fourth Postulate" or the idea that the "demand for consumption goods need not increase the demand for investment goods." Of course, at a microeconomic level, the idea that the demand for a *specific* consumption good will increase the demand for the *specific* capital goods that are required to produce it is true enough, and comes right out of Menger and the Austrian tradition. However, to think this is true of an aggregate increase in the demand for consumption goods is to fall for the fallacy of composition. If households have higher time preferences and begin to shift more of their income to current consumption expenditure, it does *not*, argued Hayek channeling Mill, increase the demand for all investment goods. In fact, the reduction in savings necessary to finance the increased consumption will *reduce* the demand for some kinds of capital by shifting resources closer to the final stages of production. Reduced savings requires a restructuring of capital, and the early-stage capital goods will bear the brunt of the reduction in demand and fall in value, as will the labor complementary to them. In order to see this, one must have the kind of disaggregated conception of capital that was part of Hayek's vision of intertemporal coordination. Only where capital is seen as having a limited number of uses and where it must fit into a structure of other capital goods will one realize the truth of Mill's Fourth Postulate and best understand why believing that consumption and investment move in tandem and not trade off is mistaken.

Keynes's level of aggregation with respect to capital can also help to explain another famous passage in *The General Theory*. At the start

of Chapter 16's "Sundry Observations on the Nature of Capital," he (1936, p.210) writes:

> An act of individual saving means—so to speak— a decision not to have dinner today. But it does *not* necessitate a decision to have dinner or to buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date. Thus it depresses the business of preparing today's dinner without stimulating the business of making ready for some future act of consumption. It is not a substitution of future consumption-demand for present consumption-demand—it is a net diminution of such demand.

As we have already seen, this is but another way of looking at the broken savings-investment nexus. However, this particular passage goes further by focusing on the more micro-level concern about how consumers can ever communicate to producers that their desire "not to have dinner tonight" is really a desire *to* have some specific good sometime in the future. In a Hayekian view of the economic process, this is the task of entrepreneurs who bring together capital and labor in an attempt to anticipate the future demands of consumers. The profit or loss they incur when those anticipations become reality provides information about what they have done right or wrong. It is exactly their attempts to take specific capital goods with a limited number of uses and combine them, along with labor, in order to produce goods that will eventually be consumption goods that is how we learn what an act of saving today implies for the future. To expect that act of saving to communicate "a specific order for future consumption" (1936, p.210) is to ask for more than any system can deliver. We are inevitably in the position of relying on entrepreneurship and profit and loss to guide the creation of capital combinations for the production of future consumer goods.[2]

When combined with Keynes's failure to understand Mill's Fourth Postulate, this level of aggregation leads to the typical Keynesian result that savings will lead to a reduction in employment

[2] Keynes, as I will show later, eventually endorsed the socialization of investment as a way to ensure that there was sufficient investment to match savings. However, he nowhere explains how the state will overcome the problem he identifies here. How will the state know what to produce if the act of saving today is not a demand for a specific good at some later point in time?

and total income. As he states later in that same paragraph: "Since the expectation of consumption is the only *raison d'etre* of employment, there should be nothing paradoxical in the conclusion that a diminished propensity to consume has, *cet. par.* a depressing effect on employment." Indeed it might *in the consumer goods industries*, but as before, Keynes's refusal to see any nexus between savings and investment blinds him to the ways in which the reduction in consumption will increase investment and thereby lengthen the structure of production. With more capital devoted to the earlier stages, the demand for complementary labor there will increase, offsetting the "depressing effect" on employment in the stages of production closest to consumption. More concretely, a reduction in the propensity to consume might reduce the employment of retail clerks or restaurant workers, but create new demands for scientists, technicians, and office workers in laboratories and research institutions. Without a more Austrian conception of capital as a staged structure of production, and without disaggregating the "I" of investment into those stages, Keynes is unable to see the other side of savings.

For Keynes, intertemporal coordination via the market is more the exception than the rule, as he says it would only be by luck that savings and investment would be equal at full employment. Where that luck does not hold, the Keynesian model shows that employment and income must adjust to ensure the equality of savings and investment. The work done in the classical and Austrian model by the interest rate in assuring that desired savings equals desired investment and thereby ensuring that changes in savings preferences do not reduce total income or employment has no counterpart in the Keynesian model. With that interest rate mechanism rendered inoperative, Keynes must rely on those changes in income (and thus employment) to adjust savings to the exogenously determined quantity of investment.[3] Where the classical and Austrian economists saw the interest rate as ensuring that the true-by-definition *ex post* equality of savings and investment would match their *ex ante* equality, Keynes requires changes in income and employment to turn a pervasive *ex ante* inequality of savings and investment into an *ex post*

[3] See Keynes (1936, p.184): "income depends on investment, in such fashion that, when investment changes, income must necessarily change in just that degree which is necessary to make the change in saving equal to the change in investment."

equality. It is precisely on this point that economics moved from the microeconomics of the capital structure to the macroeconomic aggregates of unemployment and total income.

## V. Capital, Cycles, and Policy

These contrasting conceptions of capital and intertemporal coordination matter because of the way in which they affect Hayek and Keynes's understanding of the source of intertemporal discoordination and what the policy response to depression should be. As we have seen, Keynes's entire edifice is premised on the absence of a reliable link between savings and investment and thus amounts to assuming that intertemporal discoordination is the norm in a market economy. Given his further belief that only changes in income, and therefore employment, can equilibrate these *ex ante* differences in savings and investment into *ex post* equalities, fluctuations in income and employment such as those associated with the business cycle are simply part of the furniture of a capitalist economy. Ultimately, the only way to solve those problems is to give the state a larger role in the management of investment, as he hints at the end of Chapter 16's observations on capital and suggests more explicitly in Chapter 24's concluding notes.[4] By managing the level of investment, the state could ensure that it was always sufficient to generate the income necessary to stay at full employment without need for a market mechanism to assure intertemporal coordination.

It is worth noting here that Keynes's concern that an increasing supply of capital was eliminating opportunities for new investment is also a reflection of his aggregative conception of capital. Implicit in that argument is that *more* capital means more of the *same* capital, thus like any other supply curve, it pushes down the price. However, from an Austrian perspective, more capital means more *different* capital, so even as the supply of capital grows, it does not push down the marginal efficiency of capital and undermine the incentive to invest. To the contrary: because capital is understood as specific goods with multiple but not infinite uses, increasing the supply of capital opens up opportunities to supply more capital that is *complementary* to the new capital. More capital means *more* investment opportunities, not fewer.

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[4] This is a long-standing idea in Keynes, dating back to *The End of Laissez-Faire* (2004), a decade before *The General Theory*.

So where Keynes sees trouble coming from a progressive reduction in the opportunities for investment absent state management, the trouble for Hayek arises when the state tries to do exactly what Keynes wants it to: use monetary policy to drive down the rate of interest to encourage investment. In the Austrian theory of the business cycle, the process of intertemporal coordination in the loanable funds market we outlined above becomes distorted by the effects on the interest rate of an excess supply of money. As the new money makes its way into the banking system, banks reduce their loan rates of interest and make additional loans to borrowers attracted by the lower rate. At that lower rate, lengthening the structure of production seems like a good idea, for the reasons we noted earlier. Borrowers put resources into the earlier stages of production and hire labor complementary to that capital. The capital goods created with these inflation-produced loanable funds are created for a specific range of tasks in particular processes of production in response to the lower interest rate and perceived opportunities for profit.

Unlike our earlier case in which this lengthening of the production process is coordinated with the desire of households to postpone consumption to the future, there has been no change in the time preferences of consumers, hence the expectations of producers who are lengthening their production processes are discoordinated with those of consumers who are not any more willing to wait. The excess supply of money and consequent reduction in the loan rate of interest (pushing it below the "natural" rate that corresponds to time preferences) has misled producers and disrupted the market's normal process of intertemporal coordination. In the short run, the newly created capital and the labor hired to work with it create the appearance of economic growth, but it is an artificial boom that must eventually reverse itself. At some point, the real scarcity of capital (which we noted above was a key point on which Hayek recognized that he disagreed with Keynes) will make itself known, and the prices of the various factors of production, and the interest rate, will be bid up to levels that make projects in process no longer profitable, leading to their abandonment. The bust follows as both machines and men are idled in an attempt to eliminate the mistakes made during the boom. Eventually people and machines will be revalued and reallocated to sustainable uses, though not without a painful period of adjustment.

From a Hayekian perspective, much of the Keynesian analysis starts in the middle of the story, where the resources are already idled and thus *appear* to be "abundant." If one does not have a good explanation for why resources are idled, one will be likely to make errors in how to correct those mistakes. In Hayek's theory, the artificially low interest rate has misdirected resources into the early stages of production (what the Austrians call "malinvestment"), creating specific capital goods and building specific human capital geared toward the particular outputs that those production processes generate. When these resources become idled, it is not that we just have homogenous "stuff" sitting around that can be activated into whatever use we wish. Instead, these capital resources (including human capital) have the characteristics of multiple, though not infinite, specificity that is at the core of Austrian capital theory. They cannot be used to make just anything, and even the limited number of alternative uses they might have will likely involve some cost of refitting. Bringing idle resources into productivity, even during the depths of the bust, is not costless. To go back to how Hayek saw Keynes: when one understands the specificity of capital goods, it would be only the most unusual of capital goods that would be called into activity without some increased cost to the owner, either in the form of a higher price or some investment in refitting. Once we are out of the world of apparent abundance, getting out of the bust is not as easy as Keynes makes it seem by just spending more and bringing the factors of production costlessly into the process.

Hayek's understanding of both the boom and the bust rests on his Austrian view of capital. The malinvestment of the boom can be understood only by a stages of production approach that recognizes that capital is manifested in specific capital goods that are designed for specific production processes and that have a limited number of alternative uses. It is *not* an "overinvestment" theory in the sense that "too much" capital is created. Rather it is the *wrong kind of capital* (capital devoted to lengthier production processes) that the artificially low interest rate produces. When this capital is abandoned after the reality of consumer preferences becomes clear and the processes the capital is devoted to are seen as unprofitable, it cannot simply be "reactivated" by increased consumption spending. Those capital goods cannot be used for any old production process, at least not costlessly. The bust is a process through which those capital goods are revalued and refit for their next best uses, and only the

entrepreneurial market process can discover what profitable next best uses they might have. The sorts of stimulus policies we have seen over the last few years are doomed to fail precisely because they overlook this crucial point about capital.

## VI. Conclusion

The debate between Hayek and Keynes raised a variety of issues when it raged in the 1930s. The recent revival of interest in that debate has opened up new conversations about those same topics. What has not happened yet, at least to my knowledge, is a serious re-engagement with the theory of capital, which I would argue is at the bottom of the differences between Hayek and Keynes. As Hayek recognized when he wrote *The Pure Theory of Capital*, capital theory is perhaps the most difficult sub-field in economics, and even his own best effort in that book only got so far. He could not, for example, ever get to the more dynamic, monetary treatment of the issues that he had hoped to tackle. So the task in front of those interested in the Hayek-Keynes debate is a big one: to take another look at capital theory as a window through which the differences between these two thinkers might become clear and which will help us understand their very different policy conclusions. This last point has new urgency as we continue to struggle to emerge from the most severe recession of the post-War era.

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