Cwik, Paul F. 2026. "Book Review: *Austrian Theory of Capital and Business Cycle: A Modern Approach*." *Quarterly Journal of Austrian Economics* 28 (4). https://doi.org/10.35297/001c.154305.

BOOK REVIEWS

Book Review: *Austrian Theory of Capital and Business Cycle: A Modern Approach*

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JEL Classifications: B53 Austrian, E22 Investment - Capital - Intangible Capital - Capacity, E32 Business Fluctuations - Cycles, Y3 Book Reviews (unclassified)

https://doi.org/10.35297/001c.154305

Quarterly Journal of Austrian Economics

Vol. 28, Issue 4, 2025

Austrian Theory of Capital and Business Cycle: A Modern Approach
Pavel Potuzak
Palgrave Macmillan, 2022; 164 pp.

Austrian Theory of Capital and Business Cycle: A Modern Approach, by Pavel Potuzak, is an interesting book and should be read by scholars in the Austrian tradition. I recommend it not because I agree with it but because I disagree with several of its assumptions and with its resulting analysis. Scholarly disagreements are necessary for scientific progress to be made, and I hope that these challenges will result in the further advancement of our discipline.

Many who are familiar with the Austrian school of economics think there is a unified perspective toward its approach; however, while there are important commonalities between them, Austrian economics divides into several branches. One of the earliest splits was between Austrian founder Carl Menger and his best-known student, Eugen von Böhm-Bawerk, over issues of interest and capital theory. Specifically, Böhm-Bawerk (1959) posited three factors in the formation of interest rates. The third, concerning how the productivity of capital influenced the interest rate, was controversial. Most Austrian economists reject this third factor and adhere to the pure time preference theory of interest rates. Potuzak adopts Böhm-Bawerk's position and explicitly rejects this theory. It is from this point of view that Potuzak develops his capital and business cycle theory.

The book is divided into two parts and has nine chapters. The first part, "The Austrian Theory of Capital," is covered in chapters 2 to 4, while chapters 5 to 8 cover Austrian business cycle theory.

The second chapter, on Austrian capital theory (ACT), discusses the main topics in ACT but oddly omits any mention of Israel Kirzner's notable book *An Essay on Capital* (1966). Nonetheless, Potuzak approaches ACT

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differently in two important respects. The first is his distinction between longer production methods and faster ones, *longer* meaning *more roundabout*—although it is not until later in the book that he clarifies this. Unlike Ludwig Lachmann ([1956] 1978) or Peter Lewin (2011), who associate *longer* with *increased complexity*, Potuzak reveals in later chapters that he literally means *longer in time*, since he argues that the structure of production (SOP) is definite and calculable.

The second difference in his approach to ACT is in the construction of the loanable funds model. Potuzak assumes the basis for the supply of loanable funds is time preference but, just as Böhm-Bawerk assumes, the demand for loanable funds is affected by the marginal productivity of capital (MP_K). "The long exposition for the existence of agios [an exchange premium] between present goods and future goods provides a basis for constructing an investment curve in the loanable funds market. . . . The assumptions that roundabout methods are more technically productive and that the output from the time extension of production grows at a decreasing rate (showing diminishing marginal productivity) lead to the conclusion that the investment [demand] curve is decreasing" (18). As seen in chapters 7 and 8, these different assumptions lead to conclusions that are at odds with traditional Austrian theory.

The discourse on the Hayekian triangle, in chapter 3, is constructed in a thought-provoking way. On page 26, for example, Potuzak presents a model with multiple dimensions showing different inputs for creating consumer goods. I have often toyed with a similar idea but have been unable to present it as clearly as Potuzak has. His analysis of how growth occurs through saving and investing presents overlapping SOPs, plotting the evolution of output, consumption, and savings across time.

Potuzak explores the Hayek–Knight capital debate that took place in the mid-1930s. He correctly demonstrates how the Knightian approach, which assumes completely homogeneous capital and synchronized production, is objectively flawed and leads to errors in economic theorizing. My perspective is that the key to the Hayek–Knight debate is whether the added Austrian complexity improves the analysis or drives it to a different conclusion than the Knightian approach. If the assumptions of heterogeneity of capital and a SOP produce the same results as Knight's approach, then the simplified Knightian approach would be justified. But, as Potuzak and other Austrians consistently point out, the heterogeneous nature of capital is a meaningful difference, and therefore it must be included in economic theorizing.

Breaking from traditional ACT, Potuzak assumes the SOP is definite and calculable. Specifically, he assumes the slope of the SOP (the differences in the value of the goods in process) must be consistent with the natural rate of interest. "The further a given stage is from final consumption, the more the given MVP [marginal value product] is discounted" (44). Traditional

ACT argues that the rate of discount is applied to the length of the project, not to where in the SOP it is located. For Potuzak, the location in the SOP and the length of the project are the same: the time "distance" to the consumer. But Potuzak recognizes "another complication in this analysis is the inclusion of a durable capital good, which can be used at any stage of the production process. The durable capital good is not fully utilized in one period, because it can provide services continuously over time" (27). Not included in Potuzak's analysis, however, is that capital can become obsolete *before* physical breakdown. How often have computers or smartphones been recycled long before their physical decay? Thus, it is important to point out that the physical decay of capital does not depend on time preference, and vice versa, as Potuzak's analysis implies it does.

Potuzak utilizes the same analytical approach that Garrison (2001) and I (Cwik 2024) used after building our model, which is to suppose that people become more patient. This assumption leads to a shift (an increase) in the supply of loanable funds, where the amount of savings and investment dollars increases and the rate of interest falls while the SOP flattens and becomes more roundabout. "If the labour force is sufficiently mobile and non-specific . . . this [equilibration] mechanism will therefore locate the labour force into longer processes and allow the production structure to be lengthened" (48). So far, so good; Potuzak and mainstream Austrian theory are in agreement. Potuzak then makes a Ricardian statement: "Labour reallocation ends when wages are identical in all markets" (48). While on the surface this claim is correct, it is missing the growth that comes from a more roundabout production process. With more total wealth, the SOP shifts up and real wages rise. In other words, wages do not just level out again. Potuzak is implicitly making another assumption that is not often made in modern Austrian economics. He is assuming Hayek's fully employed economy, where the economy cannot go past the production possibilities frontier (PPF). In contrast, Garrison and I assume the PPF represents the maximum sustainable level of production—that is, the economy at full employment. Potuzak, like Hayek, assumes an economy on the PPF is at the absolute maximum it can produce, where all resources are fully employed. This assumption also explains why Potuzak posits that there is a dip in production before any expansion can occur (51). Garrison and I do not use Hayek's PPF because, in the real world, an increase in the quantity of labor can occur when the nonlabor population joins the labor force.

So far, Potuzak's assumptions, while at odds with how most other Austrians model the economy, are not dramatically wrong—they are simply different. Whether his assumptions bear fruit depends on the results they yield, which are explored in the second part of his book, "Austrian Business Cycle Theory."

Part 2 examines the business cycle. Potuzak offers some unique and well-thought-out graphical analysis. He rotates the SOP diagram, as Garrison does, and uses multiple overlapping stages to show the changes in production. Potuzak shows how, over the course of the business cycle, resources are reallocated and misallocated. He assumes labor is fixed and the PPF is at a maximum that cannot be exceeded. The economy's upper turning point comes about because "the labour force is not large enough to meet the high demand for consumption goods and simultaneously to carry out longer methods of the production process" (72). In this model, it is the labor force that becomes the primary constraint that turns the boom into a bust. There are not enough resources to complete all the longer production processes. He correctly argues that during the expansion, circulating capital is converted into fixed capital and there is also not enough circulating capital to complete the fixed capital structures. "The key reason for the simultaneous existence of too much and too little capital is the mismatch in the intertemporal structure of demand and supply of present and future goods caused by monetary expansion" (74). Thus, the longer roundabout processes are abandoned (78). "The Austrian explanation of the business cycle is based on the heterogeneity of capital and the consistency of entrepreneur plans at different stages of the production process, on the one hand, and intertemporal consumer plans on the other" (79–80). The most important result is that Potuzak still obtains the normal ABCT conclusions, despite relying on nontraditional Austrian assumptions.

Chapter 6 dives deeper into the movements of the interest rate during a business cycle. Potuzak takes the traditional Austrian position that the general price level is less important than the structure of prices. In contrast to New Keynesian theory, Austrian theory rejects the proposition that an increase in the money supply can permanently reduce the market and natural interest rates. The discussion then shifts to Hayek's work on the Ricardo effect. Kaldor (1942) states that "it is absurd to assume that an increase in the rate of profit should reduce, rather than expand, the invested capital" (95). Potuzak proposes a solution based on his assumption that the demand for loanable funds is dependent on the marginal productivity of capital (MP_K). Accordingly, an increase in MP_K shifts the demand curve to the right. In contrast, if interest rates are based on the pure time preference theory, then this shift does not happen. Potuzak looks at the Ricardo effect through Kaldor's lens and concludes that Kaldor overlooks an important point. "Kaldor omitted one important step in the Austrian reasoning. It is undoubtedly true that rising consumer prices lead to higher profitability. However, this price increase is caused by reinforced consumer demand. . . . This resurrection of demand for present consumption goods represents the end of forced saving. In other words, higher consumption reduces saving in the economy. This must result in an increase in the interest rate. Consistent with the rising interest rate, profit margins (P_c/P_i) grow, as to the prices of consumer goods" (98).

Through the first six chapters, while there are some minor differences between Potuzak and mainstream Austrian theory, the two approaches are generally in alignment and reach similar conclusions. It is in the final two chapters that a wide divergence emerges, stemming from Böhm-Bawerk's third assumption on interest rates—namely, that changes in the MP_K affect interest rates.

Potuzak begins chapter 7 with the assumption of a positive technological shock and then examines its impact on the natural interest rate and the SOP. Since Potuzak allows the demand for loanable funds (D_{LF}) to be affected by ΔMP_K (Böhm-Bawerk's third reason), a positive technology shock leads to an increase in MP_K and D_{LF}, which leads to an increase in interest rates. The result is that the SOP becomes "shorter"—that is, less roundabout—but consumption does not change. After some time has passed, the higher interest rates attract more savings, which comes in the form of lower consumption. It is in this second timeframe that the SOP lengthens and flattens—consumption falls while the roundaboutness of the economy expands. As the new technology is fully implemented (a third timeframe), the PPF shifts outward, allowing the SOP to shift outward as well. In this analysis, the horizontal axis seems to be an objective clock or calendar time. Potuzak concludes that the positive technological shock will ultimately expand production and leave the economy with a higher natural interest rate. A "positive technological shock, which increases the marginal productivity of capital, spurs capital formation, [and] a subsequent rise in the interest rate may induce people to save more, by reducing their consumption, which enables an increase in the roundaboutness of the production process" (119–20). At the conclusion of Potuzak's analysis, he deduces that a mild business cycle can be caused by a positive technology shock even with a fixed money supply (127–30). This is the point where I strongly disagree with Potuzak's approach, not because there is an error in his logic. In fact, he makes a very tight argument.

There is no such thing as an exogenous positive technological shock. There can be a positive exogenous shock to demand—for example, if many more people decide to buy ice cream because a celebrity is seen in a video eating ice cream. There can be a negative exogenous shock to demand—for example, if people stop liking leisure suits. There can be a negative exogenous shock to supply through a natural disaster such as an earthquake. There can be a positive exogenous shock to supply through a surprise change in policy—for example, if an unexpected peace deal between two warring parties allows trade to resume. But there cannot be an exogenous positive *technological* shock. Research and development are not exogenous. R&D requires savings, entrepreneurial insight, and risk-taking. Even an accidental discovery assumes that someone was using resources to look for something. Maybe a new discovery leads to a change in economic efficiency that is greater than expected, but it cannot be completely exogenous. And if another company's

discovery takes the industry by surprise, a company must divert real investment capital to adopt this production technique. The difference between the legitimate and illegitimate shocks rests on the use of resources. Legitimate shocks—the sudden desire for more ice cream, the dislike of leisure suits, the occurrence of earthquakes or peace deals—do not require the use of investment resources. Since technological "shocks" require the application of research and development resources, they are not shocks.

Additionally, there is a flaw in his initial assumption, where he adopts Böhm-Bawerk's third reason for interest rates. By allowing the MP_K to affect interest rates, Potuzak sets off down the wrong path. An increase in MP_K, regardless of whether it might be greater than expected, does not alter time preference. The productive efficiency of a machine leads to an economic return on that machine, which Potuzak says is the value differential between the stages of production. But the value differential is the economic rent of a particular machine. The productivity of the machine—its economic rent—does not explain why the value is discounted through time. Suppose, for example, a machine earns an economic rent of $10,000 per year and can last for ten years. The present value of the machine is not $100,000—it is discounted. Suppose that the machine has an upgrade that doubles its rent to $20,000. This increase in economic efficiency does not explain why there should be a change in the rate of discount through time. The price of the machine will change, but the rate of discount remains the same.

In chapter 8, Potuzak presents the Keynesian recession scenario where the economy has a high level of unemployment and unused resources. He correctly argues that while monetary expansion can return the economy to "full employment," it cannot be sustained. Monetary expansion creates an illusion of recovery. The newly created capital structures are doomed to collapse.

Building on his analysis in the previous chapter, however, Potuzak extends his argument to demonstrate how a small business cycle can result from changes to the natural rate of interest due to a positive technological shock. In this section, he argues that the natural rate of interest rises due to the positive shock. If the central bank were to keep interest rates from rising, the result would be an artificial boom—the same as if it had injected new money into a stationary economy. Thus, malinvestment ensues, and the seeds of a business cycle are sown.

Overall, *Austrian Theory of Capital and Business Cycle: A Modern Approach* should be read by all Austrian economists attracted to capital, interest, and business cycle theory. The book is well-reasoned and easy to read, the diagrams are inventive and insightful, and the general story is very similar to mainstream Austrian analysis. Insofar as he adopts Böhm-Bawerk's third reason for interest rates, however, Potuzak must consider the impacts that new technologies have. Ultimately, he ends with the paradoxical conclusion

that the discovery of new productive techniques can lead an economy into a recession. Standard Austrian theory avoids this fallacy by rooting interest rate theory purely in time preference.

Submitted: September 15, 2025 CST. Accepted: September 19, 2025 CST. Published: February 03, 2026 CST.

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