

## FAMA'S EFFICIENT MARKET HYPOTHESIS AND MISES'S EVENLY ROTATING ECONOMY: COMPARATIVE CONSTRUCTS

DAVID HOWDEN

*ABSTRACT:* Mises created an artificial construct, the evenly rotating economy (ERE), from which to ascertain the source of entrepreneurial profit and loss. In particular, the ERE is characterized by two distinct elements. First is the elimination of the temporal element, second is the removal of changing market data. The second point necessarily arises from the first. Is it possible that the efficient market hypothesis (EMH), despite its practical flaws, may be used as a similar theoretical construct? If we envision a similar state of affairs as under the ERE, is it possible to grasp more fully the effect that information has on prices? We argue that it cannot, for two main reasons.

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Is it possible that the efficient market hypothesis (EMH), despite its practical flaws,<sup>1</sup> may be used as a similar theoretical construct? If we envision a similar state of affairs as under the ERE, is it possible to grasp more fully the effect that information has on prices? We argue that it cannot, for two main reasons. The first is that the necessary assumption

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David Howden (davehowden@hotmail.com) is a lecturer of economics at St. Louis University.

<sup>1</sup>See Pasour (1989), Shostak (1997), or Howden (2008) for critiques of EMH.

of a changeless environment necessarily precludes the existence of information. Second, we look at what insights we hope to gain from this model, that is, a better understanding of informational effects on monetary prices. However, like in the ERE, under a similar EMH world comparable money prices would be eliminated. In place, a system of direct exchange would arise.

A secondary goal of this brief paper is to outline the true use of the ERE. It is commonly misapplied and used beyond its limitations. A comparison with Mises's "plain state of rest" will be offered to show the true scope of this construct.

The use of an EMH construct, as a counterpart to Mises's ERE, is counterproductive. The one role that it would serve to elaborate—the effect of information on prices—would necessarily be excluded by its very construction. We find that EMH is not even useful as an abstract model from which to draw ancillary conclusions.

#### MISES'S EVENLY ROTATING ECONOMY

Mises ([1949] 1998, pp. 244–51) created an artificial construct, the evenly rotating economy (ERE) in order to better explain the entrepreneurial function by removing two elements: time, and changes in market data. In the course of removing time from this conception, Mises does not mean that time ceases to exist. The removal of time completely would imply the non-existence of everything we wish to see through the use of the ERE. Instead, the removal of time implies the removal of *Bergsonian* time in exchange for its *Newtonian* counterpart.<sup>2</sup> Under these temporal conceptions, we see the distinction between "time as quality and time as quantity" (Bergson 1889, p. 76).

Čapek (1971, p. 90) points out the three defining characteristics of real, Bergsonian, time. The first is that the passage of time is a source of change, and hence, originality. Second, time is heterogeneous. Our memories act as the link between the past and the present. As our continually expanding past augments our memories, our perceptions of time are relentlessly being altered. Third, time is not independent of its content, nor can points in time be viewed in isolation from others. Past, present, and the anticipated future are all linked together through our memories, experiences, and expectations.

In contrast, Čapek (1961, p. 36) points out the three main aspects of Newtonian time. First, as time is independent of its content, if

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<sup>2</sup>See O'Driscoll and Rizzo (1985, esp. chap. 4) for a comparison of Newtonian and Bergsonian time, as it applies to action.

changes occur in time they must occur at the beginning of time. Time itself adds nothing to induce change. Second, time is infinitely divisible. Hence, points on a timeline can each be broken into smaller points, with no adverse consequences for the effect of time (it is scalable). Third, time is homogeneous, it elapses without anything happening. The effect is that this conception of time is the antithesis of time as experienced by humans—it is static.

In the ERE, *Newtonian* time still passes, but it progresses as a static wave, existing as the true antithesis of real time. Market actors must move through it, but they do not feel it, or alter their behavior accordingly. The essential point that makes time come alive to us as acting humans is removed—it incites no new knowledge in us, and alters nothing of us. We see that as a result of this removal of the essence of time, the economy of the ERE still functions, and progresses, but it does so without change. In Mises's ([1949] 1998, 247) words:

The system is in perpetual flux, but it remains always at the same spot. It revolves evenly around a fixed center, it rotates evenly. Therefore prices—commonly called static or equilibrium prices—remain constant too.

Hence, as change is removed from the ERE, entrepreneurially acting humans are likewise removed. There are no longer discoordinations that require attending to, nor is there an equilibrium in the distant future to be reached; it already exists in the present. This state of equilibrium implies that all factors of production are allocated to the area where their discounted marginal value product is highest, as determined by consumers (Rothbard 2004, p. 514), and this allocation will remain set indefinitely.

Mises utilized this construct, well aware of its limitations, for one purpose: as a purely abstract model to demonstrate other principles, in particular, entrepreneurial profit and loss.<sup>3</sup> It was only in constructing a system that removed the entrepreneur wholly that changes concerning this role could be introduced and analyzed. For example, with the elimination of change (and the entrepreneur by association), we find that profits will also disappear. A yield will still be realized between the stages of production, however, equivalent to the time preference yield of originary interest as dictated through the passage of Newtonian time.

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<sup>3</sup>Mises was well aware of the fallacy of using static constructs: "The problem of economic calculation is of economic dynamics: it is of no problem of economic statics" (1936, 139).

### THE PLAIN STATE OF REST

The use of an artificial construct may seem odd for an economist of the Austrian School, one that prides itself on realism. Mises's endeavor was not the first attempt at static modeling. As Salerno (2006, p. 45) points out, Mises's teacher, Eugen von Böhm-Bawerk, and in turn, his teacher, Carl Menger, had utilized similar constructions. How do these alternative viewpoints dovetail with the Austrian conception of the market as a dynamic process?

Menger ([1871] 2007, p. 188) notes that:

[T]he foundations for economic exchanges are constantly changing, and we therefore observe the phenomenon of a perpetual succession of exchange transactions. But even in this chain of transactions we can . . . find points of rest at particular times. . . . At these points of rest, no exchange of goods takes place because an economic limit to exchange has already been reached.

Likewise, Menger's pupil Böhm-Bawerk speaks of the exchange process as taking place temporally. Much like monetary valuations allow for actors to reduce the bid-ask spread, or "zone" of prices that exchange will occur within, the process of valuation will also move toward reducing the temporal "zone" between changes in prices. As this temporal zone is reduced to a point in time, the market achieves a "momentary equilibrium" (Böhm-Bawerk [1889] 1959, II, p. 231).

Hayek ([1937a] 1948) defined equilibrium as the compatibility of plans. As these plans are dispersed, and potentially tacitly given, Hayek views the coordination of these plans to an equilibrium setting as highly suspect. He would, however, make subtle use of momentary equilibria—a "temporary state of rest"—to explain the coordination process.<sup>4</sup>

Hence, there were many precedents for equilibrium constructs within the Austrian School before Mises's ERE. However, the ERE took the static nature to a new level, introducing an element of unrealism not evident in these earlier approaches. Mises bridged this gap by introducing a similar concept to Böhm-Bawerk's momentary equilibrium—"the plain state of rest" ([1949] 1998, p. 245).

In his view, this was not a wholly artificial construct, but instead represented an "adequate description of what happens again and again on every market." If time ended at any given moment, this would be true. This state is achieved in the sense that the state of affairs that has occurred, and has taken all of history to reach this point in time, ends at

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<sup>4</sup>See Hayek (1941, p. 19), for one such example.

every moment. Hence, the plain state of rest can describe accurately the world that exists at any given point in time.<sup>5</sup> Hayek ([1937b] 1971, p. 22) shows that the international monetary flow mechanism can be analyzed through comparisons of plain state of rest balances. Likewise, Salerno (1994) demonstrates the process of monetary adjustment from disequilibrium to the plain state of rest. The plain state of rest is not of mere theoretical importance, but of practical importance as well.

In contrast to the passing occurrence of the plain state of rest, the ERE can never exist as a realizable state, *no matter how fleeting*. Mises takes great effort in stressing the plain state of rest is not imaginary, but an everyday occurrence on the market.<sup>6</sup> In contrast, the ERE is an *imaginal* construct, but only within its own known boundaries.

### A CONSISTENTLY ROTATING ECONOMY?

The use of the ERE has seen increased use over time, but has also come under fire. Cowen and Fink (1985) argue that the ERE fails in its role as an artificial construct as it: (1) fails to be totally unrealistic and (2) is internally inconsistent. However, through their criticism, they demonstrate a poor understanding of the ERE's construction, and its proper use. It was never created to be wholly non-descriptive of reality, this would serve against everything Mises contended as being methodologically necessary for economics. Instead, it was to be sufficiently unrealistic so as to demonstrate the problem intended—entrepreneurial profit and loss. Second, it is only viewed as internally inconsistent if it is misused, as they portray it to be. Mises made note of the fact that *exchanged* money ceases to exist in the ERE, as uncertainty is a natural precondition for the existence of this factor. This only precludes the possibility of

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<sup>5</sup>Of interesting note is that Mises viewed the possibility of a stable purchasing power of money as being an impossible realization. However, it is only in this final state of rest (Mises's later adopted term for equilibrium) that money could have a stable purchasing power—if only for a fleeting moment. See Mises ([1944] 1994, p. 47).

<sup>6</sup>As Garrison (1984) reminds us, there is no significant issue by viewing single actions as static events. All action does, after all, is transpire within its own single moment. It is only the masking of the processes that connect singular actions together—the market process—that creates a significant issue when viewing the world to exist in this unrealistically static construct. We see the meaning of this statement in light of constructs such as the plain state of rest. Hayek (1941, p. 22) views the usage of stationary states as useless as it eliminates the crux of the problem we wish to study: “[T]he construction of a stationary state is particularly useless because the main problem . . . arises just because people intend to do in the future something different from what they are doing in the present.”

explaining *monetary* changes through the ERE, something that it never originally proposed to do.

Furthermore, Cowen and Fink (1985, p. 867) fault the ERE as not sufficient in explaining how it would be reached. In their eyes, the removal of change and time does not adequately explain why an equilibrium, such as is described in an ERE, would come to exist. However, as Garrison (1991, p. 95) has countered, “[i]t is not necessary for the initial conditions to preclude all kinds of disequilibria but only to preclude systematic intertemporal disequilibrium—the kind of disequilibrium for which the theory itself accounts.” The removal of Bergsonian time eliminates the root of intertemporal disequilibrium.<sup>7</sup> Again, we see that when used *within its own limitations* the ERE provides a consistent analytical tool.

Finally, as Gunning (1989, p. 126) points out, the definition that Cowen and Fink use regarding equilibrium is mistaken:

The problem with [Cowen and Fink’s] criticism is that it is based on a *mathematical* definition of equilibrium and not a *logical* definition consistent with Mises’ pure logic of action. In the logical definition, the concept of disequilibrium is meaningless. To say that there is a tendency toward disequilibrium is like saying that individuals do not make choices.

Hence, we see that Mises’s ERE is an invaluable tool, provided one knows its limitations, and uses it appropriately. Its construction as a partly unrealistic representation does not fault its results, but instead gives added meaning and clarity to them.<sup>8</sup>

#### FAMA’S EMH AS AN ARTIFICIAL CONSTRUCT

With this in mind, is the conception of EMH as a static construct a meaningful way to look at the world? Fama (1964) originally devised a

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<sup>7</sup>O’Driscoll and Rizzo (1985, pp. 82–83) remind us that “the state of *ex ante* coordination is not enough for equilibrium; there must also be no *logical* impossibility standing in the way of the actual consummation of intentions.” The removal of dynamic Bergsonian time provides the circumstances necessary for an equilibrium to be achieved.

<sup>8</sup>Cowen and Fink make two additional errors in their conception of the ERE that deserve quick mention. First is their (1985, p. 866) contention that Mises implies the ERE to contain money prices, and their note that the lack of a futures market implies a deficiency in its construction (p. 869). When Mises ([1949] 1998, p. 416) mentions money prices, he implies money as a *numéraire*, not as an exchange medium. The lack of a futures market stems naturally from the elimination of an uncertain future, a point which deserves no further discussion.

model of exchange using two main assumptions: (1) successive price changes are independent of the previous period, and (2) these price changes conform to a known probability distribution. Later, he (1970) would add three more restrictions: (3) homogeneous expectations, (4) no transaction costs, and (5) costless information (arguably a subset of the prior assumption). The conclusion is that all prices must fully reflect in the present all known information, and therefore all future price movements can only result from future information that is different and not currently in existence.<sup>9</sup>

The first three assumptions remove real (Bergsonian) time from our model, and the final two remove frictions and allow prices to adjust instantly. A world with no *real* temporal element still experiences the creation of information. In this frictionless world, we see that information is disseminated instantly and costlessly into the market. Hence, as preferences are not changing, what is the result that is achieved?

We see that EMH is insufficiently suited to gauge changes that occur in this world it creates. An EMH world would, by definition, limit itself to effects that occur on information within its realm. In particular, we are interested in seeing the effect on prices when influenced by a new informational element. However, the uncertain element is removed from this world due to the change in temporal conception. As a result, information in the present must necessarily conform to this known future. As prices converge upon their long-term equilibrium we find that this equilibrium will be, like in the ERE, informationally valueless. As Thomsen (1992, p. 37) informs us, it is only in disequilibrium that prices provide their informational role. A movement to equilibrium would negate prices, thus eliminating information from having a value in determining them.

Thus, the removal of uncertainty from the sphere removes two elements which are central to the analysis we wish to undertake. The first is *real* information. The essence of information is that it is fresh—it is the creation of our present state of affairs and shapes our expectations of the future. The corollary to this is that information exists, and is sought in the present, *always* as a result of an uncertain future. In an EMH world, as this future uncertainty is removed, information loses this important influence that it once held. In fact, it becomes valueless—we already have all the information we need.

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<sup>9</sup>Although commonly viewed as a trichotomy of forms, for our purposes we will focus on the “strong-form” of EMH whereby prices reflect all private and publicly available information.

Second, as in the ERE, money prices no longer exist in the EMH world. A system of direct exchange commences, precluding the need, and use, of an indirect medium. But the effect on prices is what we are supremely interested in by using this construct. The removal of the existence of this factor leave us further away from the goal we seek—the reason behind the formation of prices.

### CONCLUSION

Is the EMH a proper static construct from which to start when viewing changes occurring in the market, similar to Mises's ERE? Beechey, Gruen and Vickery (2000, p. 23) believe so and state that "[t]he efficient market hypothesis is almost certainly the right place to start when thinking about asset price formation." However, despite being theoretically similar, we see that EMH cannot assume a role as an abstraction similar to the ERE. Part of the reason may be gleaned from Mises's ([1949] 1998, p. 248) own description of the tool:

In order to grasp the function of entrepreneurship and the meaning of profit and loss, we construct a system from which they are absent. This image is merely a tool for our thinking. It is not the description of a possible and realizable state of affairs. It is even out of the question to carry the imaginary construction of an evenly rotating system to its ultimate logical consequences. For it is impossible to eliminate the entrepreneur from the picture of a market economy. The various complementary factors of production cannot come together spontaneously.

EMH also cannot be taken to its full logical conclusion, but if it could, the result would take us further from the answer we seek than when we begin. We seek to determine the effect that information serves on the prices of assets. However, we see two things develop as we enter the EMH world that complicate this possibility. The first is that real information ceases to exist, and hence, loses all value to the acting human as the future is assumed certain. Second, monetary prices are eliminated as a result of this same removal of uncertainty. Hence, the two subjects we wish to study—information and its effect on prices—become an impossibility. In contrast to the ERE, we find that EMH is too unrealistic to provide insights into these elements, *even when used as a purely artificial construct*.

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