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How Efficient is Sufficient: Securities Litigation post Halliburton

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The Supreme Court refocused attention on the role of the Efficient Market Hypothesis, ("EMH"), in securities litigation with its decision in *Halliburton Co. et al. v. Erica P. John Fund, Inc.*[1,2] In particular, the Court stressed the EMH should not be thought of as a yes or no proposition, but in relative terms. More specifically, the Court said, "*Basic's* presumption of reliance thus does not rest on a 'binary' view of market efficiency. Indeed, in making the presumption rebuttable, *Basic* recognized that market efficiency is a matter of degree and accordingly made it a matter of proof."[3] The court went on to add that "Because market efficiency is not a yes-or-no proposition, a public, material misrepresentation might not affect a stock's price even in a generally efficient market."[4]

The renewed emphasis on a relative notion of market efficiency is consistent with the thinking that has prevailed in financial economics. In their widely adopted text, Campbell, Lo and MacKinlay use an analogy to highlight the importance of thinking in terms of relative efficiency:

> *The advantages of relative efficiency over absolute efficiency are easy to see by way of analogy. Physical systems are often given an efficiency rating based on the relative proportion of energy or fuel converted to useful work. Therefore, a piston engine may be rate at 60% efficiency, meaning that on*

[1] 573 U.S. ___ (2014).

[2] For a general discussion of the role of the EMH in litigation *see* Ronald J. Gilson and Reinier Kraakman, 1984, "Mechanisms of market efficiency," 70 *Virginia Law Review* 549. *See also* Ronald J. Gilson and Reinier Kraakman, 2014, "Market efficiency after the financial crisis: It's still a matter of information costs," *Virginia Law Review,* forthcoming. This note focuses solely on the impact of the recognition that market efficiency is a continuous, not a binary, variable.

[3] *Halliburton*, 573 U.S. ___, at 10.

[4] *Halliburton*, 573 U.S. ___, at 18.

average 60% of the energy contained in the engine's fuel is used to turn the crankshaft, with the remaining 40% lost to other forms of work such as heat, light or noise. Few engineers would ever consider performing a statistical test to determine whether or not a given engine is perfectly efficient – such an engine exists only in the idealized frictionless world of the imagination. But measuring relative efficiency – relative to the frictionless idea – is commonplace. . . Similarly, market efficiency is an idealization that is economically unrealizable, but that serves as a useful benchmark for assessing relative efficiency.[5]

The recognition that efficiency is a relative concept is all well and good, but what more can be said? Does the relative nature of efficiency have implications for litigation beyond those recognized by the court in *Halliburton*? If so, how is the level of efficiency to be assessed? A starting point for exploring such questions is asking what bounds can be placed on relative efficiency.

Placing bounds on and assessing the degree of efficiency

The best place to start is with Fama's classic definition of market efficiency. Fama stated that a market is (semi-strong form) efficient if a security's price reflects all publicly available information relevant to the valuation of the security.[6] It did not take long for finance scholars to realize that no market could be that efficient. As noted most promptly by Grossman and Stiglitz, markets become efficient through the research and trading

[5] John Y. Campbell, Andrew W. Lo, and A. Craig MacKinlay, 1997, *The Econometrics of Financial Markets*, Princeton University Press, Princeton, NJ 24.

[6] *See* Eugene F. Fama, 1970, "Efficient capital markets: A review of theory and empirical work," 25 *Journal of Finance* 404 ("In general, semi-strong form tests of efficient markets models are concerned with whether current prices 'fully reflect' all obviously publicly available information.").

activities of sophisticated investors.[7] If prices continuously reflect all publicly available information then those investors will not earn a return on their efforts.[8] But those efforts are the source of market efficiency. Consequently, there must be sufficient inefficiency that sophisticated investors have an incentive to bear information-gathering and information-processing costs. As a result, there is a Grossman-Stiglitz upper bound on the efficiency of markets. Unfortunately, although the work of Grossman and Stiglitz demonstrates that there must be such a bound, it does not say what the bound is or how to measure the level of market efficiency.

Turning to the other end of scale is there a limit on the inefficiency of a market? To address that question, it is helpful to paraphrase Fama's classic definition of efficiency. An equivalent way of saying that the market price reflects all public information is stating that price and value based on public information are perfectly correlated. That is, when estimated value moves, price moves by the same amount to maintain equality between the two variables. Using the second formulation, it follows that a truly "inefficient" market would one in which there was no correlation between price and value. Seen in this light it is clear, that there are no, and can never be any, inefficient markets.

This is true not only of highly competitive and information-sensitive markets, such as those for actively traded securities, but of markets for all goods and services. Consider, for instance, the market for writing instruments. If the market were truly "inefficient," then presumably a plastic Bic pen would be equally likely to trade for more or less than a gold Montblanc. Clearly, no market for any good or service could persist in such form. The

[7] Sanford J. Grossman and Joseph E. Stiglitz, 1980, "On the impossibility of informationally efficient markets," 70 *American Economic Review* 397-398.

[8] *Id.* at 400-402.

incentives to take advantage of discrepancies between price and value would be so immense the market would transform itself almost instantly. The implication is that all existing markets should be thought of as inhabiting the high end of an idealized scale of efficiency. In fact, markets work as a mechanism for allocating resources precisely because price and value are highly correlated. If they were not, the market would collapse.

The foregoing implies that market efficiency is characterized by two bounds – there must be sufficient efficiency to sustain the market as an allocation mechanism but the degree of efficiency cannot exceed the Grossman-Stiglitz upper bound. This raises the follow-on question of whether there is a way to rank markets, to scientifically measure the degree of efficiency between the bounds. The short answer is no for reasons I elaborate below. Consequently, in place of a direct scientific measurement of efficiency, courts, and many scholars, have turned to indirect assessments. Following the logic of Grossman and Stiglitz, the degree of efficiency should be related to the cost of procuring and analyzing value-related information and the benefits from so doing. Presumably, the benefits are related to the size positions that an investor can take without moving prices unfavorably. This suggests that bigger, deeper and more liquid markets are likely to be more efficient. In addition, the availability and cost of information affects the cost of doing research. Presumably, markets supported by sophisticated information networks and regulations that require widespread access to information, such as highly developed financial markets, should, therefore, be more efficient.

Applying the foregoing reasoning, courts have generally adopted criteria laid down in *Cammer v. Bloom*[9] and *Krogman v. Sterritt*[10] when assessing efficiency. The first of the

[9] 711 F.Supp. 1264 (D.N.J. 1989).

two cases, *Cammer*, pointed to five indicia of efficiency: (1) average weekly trading volume of two percent or more of the outstanding shares;[11] (2) "a significant number of analysts follow[ing] and report[ing] on the stock during the class period";[12] (3) numerous market makers;[13] (4) eligibility to file an S-3 Registration Statement in connection with public offerings, or if the company is ineligible, such ineligibility was due entirely to timing factors rather than the fact that the minimum stock amount was not met;[14] and (5) "an immediate response in stock price" to unexpected company-specific news disclosures.[15] All of these factors, with the exception of the fifth, which is discussed below, are measures related to the costs and benefits of obtaining, processing and profiting from information.

Krogman extended the *Cammer* analysis by adding three additional indirect criteria: (1) market capitalization, or the number of outstanding shares multiplied by the prevailing stock price; (2) bid-ask spread; and (3) float, or the percentage of shares held by the public rather than insiders.[16] Once again, these criteria speak to the costs and benefits associated with obtaining, processing and profiting from information.

There is one of the *Cammer* and *Krogman* criteria that speaks to a direct assessment of efficiency that is amenable to scientific quantification – the speed with which security

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[10] 202 F.R.D. 467 (N.D.Tex. 2001).

[11] 711 F.Supp. at 1286.

[12] *Ibid.*

[13] *Id.* at 1287.

[14] *Ibid.* The SEC Form S-3 registration statement allows certain public companies that have complied with the SEC's periodic reporting requirements for at least one year to incorporate those previous filings by reference. See www.sec.gov/about/forms/forms-3.pdf, accessed June 12, 2014.

[15] *Ibid.*

[16] 202 F.R.D. at 478.

prices respond to information. According to Fama's definition of efficiency, prices should respond immediately to public information, so the faster the response the more efficient the market. The ability to quantify reaction time led to a distinction, pioneered by Sharpe, between *informational* efficiency and *fundamental* efficiency.

As defined by Sharpe, a market is informationally efficient if prices respond immediately so that investors cannot make abnormal returns by trading in response to public announcements. It is important to stress that informational efficiency relates solely to the *speed* of the market reaction to information, not whether or not it responds rationally or accurately. By contrast, a market that is fundamentally efficient is one that gets prices "right." By right is meant that the market price equals the present value of expected future cash flows discounted at the appropriate cost of capital. Notice that if a market is fundamentally efficient, by definition it will always be informationally efficient because price adjusts immediately to maintain equality with value.[17]

The good news is that informational efficiency can be objectively tested using event studies. The time path of the price response to an information release can be measured using trade-by-trade data. In a perfectly efficient market, the price would jump immediately upon release of the information and move randomly after that. There would be no slow adjustment to news. There have been hundreds of tests of informational efficiency, the results of which reveal that developed securities markets are highly informationally efficient.[18] There is little evidence of systematic delayed response and the evidence that there is remains controversial. In this regard, it is worth noting that the

[17] *See* William F. Sharpe, *Investments*, 2d. Ed., Prentice-Hall, 1981 71-72.

[18] See, for example, Jeffrey A. Busse and T. Clifton Green, 2002,"Market Efficiency in Real Time," 65 *Journal of Financial Economics* 415.

Grossman-Stiglitz argument does *not* imply that markets *cannot* be fully informationally efficient. It only says that markets must be sufficiently inefficient that sophisticated investors can earn a fair return on their investment in research. The required inefficiency is much more likely to be fundamental.

Assessing fundamental efficiency is a different story. As Fama stressed when he introduced his definition of market efficiency any test of fundamental efficiency is a joint test of market efficiency and a theory of asset pricing or valuation. The joint nature of tests of fundamental efficiency is a major hurdle. For instance, if fundamental efficiency is interpreted to say that price equals the present value of expected future cash flows, whose expectations and discount rate are being used to compute the present value? As early as 1986, Summers demonstrated that standard statistical tests of efficiency have essentially no power against interesting alternative hypotheses to fundamental efficiency. He concluded that,

> The inability of these tests to reject the hypothesis of market efficiency does not mean that they provide evidence in favor of its acceptance. In particular, the data in conjunction with current methods provide no evidence against the view that financial market prices deviate widely and frequently from rational values.[19]

That conclusion remains as true today as when Summers wrote it. A prominent example is the rise of behavioral finance that has raised a host of thorny questions involving fundamental efficiency, virtually none of which have been resolved.[20]

There has been extensive empirical analysis of fundamental inefficiency but the results are all over the lot. That is the way it must be. Identifiable and persistent instances

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[19] Lawrence H. Summers, 1986, "Does the stock market rationally reflect fundamental values," 41 *Journal of Finance* 592.

[20] *See,* for example, Eugene F. Fama, 1998 "Market efficiency, long-term returns and behavioral finance,"49 *Journal of Financial Economics* 283.

of fundamental inefficiency would be easily exploitable. Therefore, inefficiency must bubble up and recede in an unpredictable fashion over time and across securities so that only the most insightful can exploit it. From the standpoint of courts and outside observers, there is no readily available objective measure that can be used to assess the extent of inefficiency. In fact, there cannot be such an objective measure. If there were, investors could exploit it to eliminate any fundamental inefficiency in the first place. The bottom line is that Grossman-Stiglitz analysis implies that some fundamental inefficiency must exist, but how large it is and how it varies over time, across securities, and even across markets remain unresolved questions from a scientific perspective.

While judgmental criteria, such as those proposed in *Cammer* and *Krogman* may be assumed provide insight into the relative efficiency of a market, as of yet no one has developed a method for testing the scientific validity of that assumption with regard to fundamental efficiency.

Relative efficiency and litigation

If efficiency were a binary yes or no question, the task facing courts would be relatively straightforward. Criteria could be set down for assessing whether or not the market was efficient. This is, in effect, what *Cammer* and *Krogman* attempt to do. Once efficiency is established or rejected, the appropriate legal implications could then be developed. But if efficiency is a continuous variable that ranges between upper and lower bounds, neither of which can be numerically specified, the landscape of legal options becomes much more complex. At a minimum, it means that different levels of efficiency, and even different types of efficiency (informational versus fundamental), could be applicable in different legal contexts. Here I present one specific example to illustrate the

issue – whether the measure of efficiency used to determine reliance should be different from that used as a basis for estimating damages in securities litigation.

Market efficiency, reliance and damages in securities litigation

To start with reliance, *Basic* has been interpreted to say that the relevant economic question is whether the market at issue is sufficiently efficient that it is rational for an investor to rely on the integrity of the price obtained in that market. Cornell and Rutten argue that the appropriate answer to that question depends not on some absolute measure of market efficiency, but rather the extent to which the level of market efficiency permits investors to identify and exploit inefficiencies.[21] In this context, it makes sense to presume reliance on the integrity of the market price if the relevant market bears enough hallmarks of efficiency that investors, mindful of the costs they would incur if they conducted their own research into stock values, reasonably could decide instead to treat the market's price as indicative of fair value. For most investors, this is almost certain to be the case. Even if such investors believe that the market is not fundamentally efficient, it is rational for them to act as if it were unless they believe they can price securities more accurately. Except for the most sophisticated investors, therefore, assuming efficiency is the proper conclusion. The market at issue may not be perfectly efficient, but in comparison to the information gathering and processing abilities of the great majority of investors it may as well be. This implies that courts would want to adopt a relatively low standard of efficiency for the purposes of assessing reliance.[22]

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[21] *See* Bradford Cornell and James C. Rutten, "Market Efficiency, Crashes, and Securities Litigation," 81 *Tulane Law Review* 455-456.

[22] *See Peil*, 806 F.2d at 1161 n.11 (holding that reliance should be presumed "only where it is logical to do so") (internal quotation marks and citations omitted).

With regard to damages, however, the situation is different. In the damages context, unlike reliance, the question goes not only to whether the alleged fraud affected the stock price but the *extent* to which the stock price was affected. One cannot accurately measure damages by reference to movements in stock prices unless the market is sufficiently efficient in a fundament sense that it reacts in the proper magnitude in response to fraudulent statements and later revelation of the true facts. Although courts have concluded that damages in securities fraud cases need not be measured accurately – only approximated[23] – even approximating damages by reference to movements in stock prices requires the market to approach full fundamental efficiency because even minor inefficiencies are magnified significantly by the selection bias that arises in litigation.

Selection bias arises because damages are measured *ex-post*. Before filing a class action lawsuit, the plaintiff has the privilege of seeing how the stock price moved. A plaintiff typically will not file suit unless the price moved sufficiently on the release of information that was ostensibly related to an alleged fraud. However, *conditional* on the fact that a large stock price movement has occurred, the probability that the movement is due in part to investor sentiment or other effects unrelated to fundamental valuation is greatly increased. This means that unless markets are close to full fundamental efficiency, estimates of damages based on analyses of stock price movements are likely to overstate damages, possibly significantly, because of the ability of plaintiffs to exploit selection bias. To minimize the impact of such selection bias, it behooves courts to impose a higher efficiency hurdle for measuring damages than that employed for assessing reliance.

[23] *See, e.g.*, Holmes v. Bateson, 434 F. Supp. 1365, 1388 (D.R.I. 1977).

In a damages context, it is not sufficient that markets be efficient enough that typical investors conclude it is reasonable for them to accept the market price rather than do individual investment research. Instead, courts need to be satisfied that any stock price movements used to estimate damages reflect changes in fundamental value and not investor sentiment or some other behavioral inefficiency.

Conclusion

In *Halliburton*, the Supreme Court stressed that market efficiency is a relative concept that must be expressed as a continuum, not a binary yes or no consideration. That conclusion is consistent with research in financial economics. Unfortunately, recognizing that market efficiency is a continuous variable and applying that concept in litigation are different things. The problem is compounded because there is currently no scientific way to measure the level of efficiency. Although bounds on efficiency can be shown to exist, the extent of those bounds in precise terms or where any specific market may lie within them remain unresolved questions. Furthermore, if efficiency is a continuum, it may be appropriate to apply different standards of efficiency in different legal contexts. Here I present a specific example in which it may be appropriate to require a higher level of efficiency for measuring damages than assessing reliance. But that is just one example. Opening the door to relative efficiency is likely to have numerous other implications for litigation.