United States Court of Appeals for the Fifth Circuit

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Fifth Circuit
FILED
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Thomas B. Plunkett, III
Clerk

No. 25-50855

MOHAMMAD BOZORGI; KEN CALDERONE; MANOHAR K. RAO, *Individually and on Behalf of All Others Similarly Situated*; ALL PERSONS OR ENTITIES WHO, BETWEEN SEPTEMBER 14, 2020 and OCTOBER 12, 2023, PURCHASED or OTHERWISE ACQUIRED CASSAVA SCIENCES, INC. SECURITIES,

Plaintiffs—Appellees,

versus

CASSAVA SCIENCES, INCORPORATED; REMI BARBIER; ERIC J. SCHOEN; LINDSAY BURNS,

Defendants—Appellants.

Appeal from the United States District Court
for the Western District of Texas
USDC No. 1:21-CV-751

Before WILLETT, ENGELHARDT, and DOUGLAS, *Circuit Judges*.

KURT D. ENGELHARDT, *Circuit Judge*:

A group of investors allege Cassava Sciences and its executives misrepresented the success of Cassava's experimental Alzheimer's drug "simufilam," defrauding investors under sections 10(b) and 20(a) of the Securities Exchange Act and Rule 10b-5. The district court certified a class of "[a]ll purchasers or acquirers" of Cassava securities between September

14, 2020, and October 12, 2023. According to defendants, the class period covers the rise of the "meme-stock phenomenon"—where retail traders use social media platforms to fuel collective trading behavior, driving stock prices up or down in ways "untethered from company fundamentals or broader market trends." Defendants appealed the class certification order, arguing Cassava faced "meme-stock dynamics" that should have defeated class certification. Because the district court misapplied legal standards while assessing Rule 23(b)(3)'s predominance requirement, we VACATE the class certification order and REMAND.

I.

Cassava Sciences is a biopharmaceutical company developing drugs to treat neurodegenerative diseases like Alzheimer's. The company developed its experimental Alzheimer's product, simufilam, in 2011. Following an efficacy study yielding unsuccessful simufilam results in May 2020, Cassava's stock price dropped.

From there, plaintiffs allege defendants defrauded investors in promoting simufilam "by concealing facts that undermined the integrity of Cassava's research." Defendants allegedly "amplified simufilam's ostensibly promising results," while failing to acknowledge data manipulation, research anomalies, and conflicts of interest. Plaintiffs allege that defendants touted the effectiveness of simufilam in press releases, SEC filings, and scientific journals. As alleged, each public statement caused Cassava's stock price to skyrocket. But after various disclosures negating simufilam's success, Cassava's stock price plummeted. Plaintiffs filed securities fraud claims against the company and several executives.[1]

[1] The SEC also brought securities fraud charges against defendants Cassava, Barbier, and Burns. The defendants settled and must pay civil penalties.

Plaintiffs first moved to certify an investor class in March 2024, and the magistrate judge recommended the district court grant the motion. After the magistrate judge's Report and Recommendation, defendants filed a *Daubert* motion to exclude one of plaintiffs' experts, and plaintiffs moved to strike that motion as untimely. The district court denied the original class certification motion without prejudice due to changed circumstances, struck defendants' *Daubert* motion as untimely, and granted plaintiffs leave to file an amended complaint. The court ordered that plaintiffs should refile their motion for class certification but directed the parties to present "[n]o new arguments, evidence, or non-existing briefing." Most relevant to this appeal, the existing evidence included economic expert reports from Dr. Steven P. Feinstein (for plaintiffs) and Dr. Rene M. Stulz (for defendants). The district court certified the class, appointed plaintiffs as class representatives, and appointed class counsel.

Defendants petitioned to appeal the class certification order under Rule 23(f), which our court granted. FED. R. CIV. P. 23(f) (permitting petition for interlocutory appeal from order granting or denying class certification). On appeal, defendants assert numerous challenges to the district court's analysis of Rule 23's certification prerequisites, along with other procedural errors.

II.

One jurisdictional matter comes first. After defendants filed this Rule 23(f) appeal, the parties mediated a binding settlement agreement.[2] Plaintiffs

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[2] Plaintiffs ask the court to take judicial notice of three documents relevant to the settlement: (1) a Notice of ADR/Mediation Outcome, filed in the district court; (2) Cassava's Form 8-K, filed with the SEC; and (3) a December 2025 Cassava press release announcing the settlement. The ADR Notice and the Form 8-K are judicially noticeable matters of public record. FED. R. EVID. 201(b)(2); *In re Deepwater Horizon*, 934 F.3d 434, 440 (5th Cir. 2019) (court filings); *Lovelace v. Software Spectrum Inc.*, 78 F.3d 1015,

argue the binding class settlement moots this action, invoking Article III's familiar cases and controversies jurisdictional limit. They suggest each of the defendants "will be given permanent peace after the Settlement's final approval in the district court." Plaintiffs' use of the future tense reveals the flaw in their mootness argument. Rule 23(e) requires court approval of a class settlement. FED. R. CIV. P. 23(e). And a "settlement that can take effect only with court approval does not moot an action unless the court grants approval." 13B CHARLES ALAN WRIGHT, ARTHUR R. MILLER & EDWARD H. COOPER, FEDERAL PRACTICE & PROCEDURE § 3533.2 (3d ed. 2026); *In re Asbestos Litig.*, 90 F.3d 963, 988 (5th Cir. 1996) ("The Supreme Court has stated that the existence of a proposed settlement does not render an action moot where judicial approval of the settlement is required before the settlement will bind the parties." (citing *Havens Realty Corp. v. Coleman*, 455 U.S. 363, 371 n.10 (1982))), *vacated on other grounds by Ortiz v. Fibreboard Corp.*, 521 U.S. 1114 (1997) (mem).

At oral argument, plaintiffs argued the proposed settlement's non-approval does not matter—the agreement is binding on defendants. So, in their view, the 23(f) appeal is moot.But settlement approval requires a certified class—whether previously certified or certified for settlement purposes. FED. R. CIV. P. 23(e). And the parties' settlement itself carves out this appeal. Stipulation of Settlement at 41, *In re Cassava Scis., Inc. Sec. Litig.*, No. 21-cv-00751 (W.D. Tex. June 18, 2026), Dkt. No. 381-1 (agreeing to stay proceedings apart from this appeal). We will not opine on the settlement's effect on the remaining district court proceedings. A live

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1018 & n.1 (5th Cir. 1996) (SEC-required public disclosure documents). We need not address whether the press release is judicially noticeable because the relevant information is contained in the other two documents. We GRANT IN PART and DENY IN PART plaintiffs' motion for judicial notice.

controversy remains, and we reject plaintiffs' request to dismiss the appeal as moot or hold it in abeyance until the district court rules on the proposed settlement.

On to the thrust of this appeal: the propriety of the district court's class certification order.

III.

"We review class certification orders for abuse of discretion, recognizing the 'essentially factual basis of the certification inquiry and of the district court's inherent power to manage and control pending litigation.'" *Kincannon v. United Airlines, Inc.*, 168 F.4th 713, 721 (5th Cir. 2026) (quoting *Sampson v. United Servs. Auto. Ass'n*, 83 F.4th 414, 418 (5th Cir. 2023)). If the district court has premised "its legal analysis on an erroneous understanding of governing law, it has abused its discretion." *Sampson*, 83 F.4th at 419 (citation modified).

"Certification requires plaintiffs to satisfy all requirements of Rule 23(a)—numerosity, commonality, typicality, and adequacy—and at least one of the three requirements listed in Rule 23(b)." *Id.* at 418 (citing *Wal-Mart Stores, Inc. v. Dukes*, 564 U.S. 338, 345–46 (2011)). In a Rule 23(b)(3) class action, like this one, "questions of law or fact common to class members [must] predominate" over individualized questions and the class action must be "superior to other available methods" of adjudication. *See* FED. R. CIV. P. 23(b)(3). We start and end with predominance here, concluding the district court abused its discretion by applying an incorrect legal standard.

A.

The predominance inquiry begins with the "elements of the underlying cause of action." *Erica P. John Fund, Inc. v. Halliburton Co.* (*Halliburton I*), 563 U.S. 804, 809 (2011). Section 10(b) and Rule 10b-5

claims require: (1) a material misrepresentation or omission; (2) scienter; (3) a connection between the misrepresentation or omission and the purchase or sale of a security; (4) reliance on the misrepresentation or omission; (5) economic loss; and (6) loss causation.[3] *Id.* at 809–10 (citing *Matrixx Initiatives, Inc. v. Siracusano*, 563 U.S. 27, 37–38 (2011)). "Whether common questions of law or fact predominate in a securities fraud action often turns on the element of reliance." *Id.* This case is no exception.

In this securities-fraud context, "plaintiffs may show reliance on a defendant's misrepresentations—and therefore satisfy [Rule] 23(b)(3)'s predominance requirement—by invoking the *Basic* presumption[.]" *Ga. Firefighters' Pension Fund v. Anadarko Petroleum Corp.*, 99 F.4th 770, 773 (5th Cir. 2024) (citing *Basic Inc. v. Levinson*, 485 U.S. 224, 247 (1988)). *Basic* "allows courts to presume 'an investor's reliance on any public material misrepresentations' if certain requirements are met." *Id.* (quoting *Basic*, 485 U.S. at 247). The *Basic* presumption's fraud-on-the-market theory encompasses the understanding that (A) "the market price of shares traded on well-developed markets reflects all publicly available information, and, hence, any material misrepresentations," and (B) that "an investor relies on public misstatements whenever he 'buys or sells stock at the price set by the market.'" *Halliburton I*, 563 U.S. at 811 (quoting *Basic*, 485 U.S. at 244, 246–47). To avail themselves of the rebuttable presumption, plaintiffs must first prove (1) "the alleged misrepresentation was publicly known;" (2) "it was material;" (3) "the stock traded in an efficient market;" and (4) "the

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[3] Section 20(a) control liability claims exist only with a primary violation of, for example, section 10(b). *See Alaska Elec. Pension Fund v. Flotek Indus., Inc.*, 915 F.3d 975, 981, 986 (5th Cir. 2019) (concluding section 20(a) claim failed because plaintiffs had not pleaded a violation of section 10(b) and "[c]ontrol person liability [under section 20(a)] is secondary only and cannot exist in the absence of a primary violation" (citing *Southland Sec. Corp. v. INSpire Ins. Sols., Inc.*, 365 F.3d 353, 383 (5th Cir. 2004)).

plaintiff traded the stock between the time the misrepresentation was made and when the truth was revealed." *Ga. Firefighters' Pension Fund*, 99 F.4th at 773 (citation modified).

We zero-in on the efficient market element here. "Absent an efficient market, individual reliance by each plaintiff must be proven, and the proposed class will fail the predominance requirement." *Unger v. Amedisys Inc.*, 401 F.3d 316, 322 (5th Cir. 2005) (citation omitted). The market efficiency determination demands a "rigorous, though preliminary, standard[] of proof." *Id.* (collecting cases). *Basic* counsels that efficient markets incorporate publicly available information in stock price. *Basic*, 485 U.S. at 246–47; *Amgen Inc. v. Conn. Ret. Plans & Tr. Funds*, 568 U.S. 455, 461 (2013) ("The fraud-on-the-market theory rests on the premise that certain well[-]developed markets are efficient processors of public information."); *Unger*, 401 F.3d at 324 ("In an efficient market, where information is nearly perfect, material misstatements alter a stock's price almost immediately."). To assess whether the market for a particular security does so, our court often assesses the *Cammer*/*Krogman* factors:

> (1) the average weekly trading volume expressed as a percentage of total outstanding shares; (2) the number of securities analysts following and reporting on the stock; (3) the extent to which market makers and arbitrageurs trade in the stock; (4) the company's eligibility to file SEC registration Form S–3 (as opposed to Form S–1 or S–2); (5) the existence of empirical facts showing a cause and effect relationship between unexpected corporate events or financial releases and an immediate response in the stock price; (6) the company's market capitalization; (7) the bid-ask spread for stock sales; and (8) float, the stock's trading volume without counting insider-owned stock.

Unger, 401 F.3d at 323 (citation modified) (outlining first five factors from *Cammer v. Bloom*, 711 F. Supp. 1264, 1286–87 (D.N.J. 1989), and remaining three factors from *Krogman v. Sterritt*, 202 F.R.D. 467, 477–78 (N.D. Tex. 2001)). But the *Cammer*/*Krogman* factors are not exhaustive. *Id.* Courts must analytically weigh these "tools for gauging market efficiency," instead of simply counting them. *Id.*; *Bratya SPRL v. Bed Bath & Beyond Corp.*, 752 F. Supp. 3d 34, 54 (D.D.C. 2024) (recognizing *Cammer*/*Krogman* factors are a tool "probative of informational efficiency").

Critically, courts must consider *all* evidence for and against market efficiency in assessing whether the *Basic* presumption applies. *See Unger*, 401 F.3d at 325 ("Because Rule 23 mandates a complete analysis of 'fraud on the market' indicators, district courts must address and weigh factors both for and against market efficiency."); *In re Petrobras Sec.*, 862 F.3d 250, 277 (2d Cir. 2017) (endorsing "holistic analysis" of market efficiency "based on the totality of the evidence presented"); *Local 703, I.B. of T. Grocery & Food Emps. Welfare Fund v. Regions Fin. Corp.*, 762 F.3d 1248, 1254–55 (11th Cir. 2014) (recognizing "flexibility to make the fact-intensive [market efficiency] inquiry on a case-by-case basis" considering "new factors yet unknown" that "market theorists might consider to indicate market efficiency").

B.

The district court rejected defendants' "meme stock argument" as "legally and factually inaccurate." As a matter of law, the district court noted that "no Fifth Circuit case law" directs courts to avoid the *Cammer*/*Krogman* factors "when the defendant argues that the stock was a meme stock." And, as a matter of fact, it rejected the notion that Cassava was a meme stock because defendants' expert Stulz never explicitly opined that it was one or that it traded in an inefficient market. The district court relied on plaintiffs' expert Feinstein's opinion and, without analysis, concluded the meme stock

argument "is unsupported and moot." From there, the district court ticked through each *Cammer*/*Krogman* factor and concluded Cassava traded in an efficient market. The district court's approach misapplied the legal standard by failing to evaluate evidence of market inefficiency and rejecting defendants' meme-stock-dynamics argument out of hand. *See Unger*, 401 F.3d at 325 (requiring "complete analysis of 'fraud on the market' indicators"). Properly applied, the district court would have addressed and weighed "factors both for *and against* market efficiency." *Id.* (emphasis added).

The error of the district court's approach is illuminated by record evidence that could suggest market inefficiency—like price volatility in the absence of news and short selling constraints. "[I]n an efficient market, a stock's price remains relatively stable in the absence of news, and changes very rapidly as the market receives new and unexpected information." *Krogman*, 202 F.R.D. at 477. Stulz opined on Cassava's price volatility in the absence of news and in the face of meme-stock dynamics, comparing Cassava stock to well-recognized meme stocks like AMC and GameStop. Such evidence undermines *Basic*'s key premise that the stock was incorporating information efficiently. *See Bratya SPRL*, 752 F. Supp. 3d at 58 (noting that high trading volume could indicate stock price inflation "without any regard to value-relevant information" and that the relevant inquiry is "whether its stock price was information efficient" (citation modified)); *cf. also Halliburton Co. v. Erica P. John Fund, Inc.* (*Halliburton II*), 573 U.S. 258, 272 (2014) (recognizing that it is not stock price inaccuracy alone that is important but the effect of false statements on price).

What's more, short selling constraints provide "indirect evidence of market inefficiency." *Bratya SPRL*, 752 F. Supp. 3d at 59 (quoting *Smilovits v. First Solar, Inc.*, 295 F.R.D. 423, 434 (D. Ariz. 2013)). As Stulz explained, short selling constraints "impede market efficiency by . . . hindering the

process by which information is incorporated into prices." Stulz opined about various short selling constraints affecting Cassava stock, such as the utilization rate peaking at over 93 percent during the class period and high borrowing costs peaking at 67 percent. These short selling constraints provide evidence that Cassava's market may have inefficiently processed information. *See id.* at 59–60 (noting short utilization rate near 100 percent during the class period was evidence that stock was not informationally efficient and borrowing costs peaking at 50 percent during the class period "limited arbitrageurs from translating negative information into [stock] price").

Although the district court is tasked with considering the "essentially factual basis of the certification inquiry," *Kincannon*, 168 F.4th at 721 (internal quotation marks and citation omitted), the district court adopted Feinstein's conclusions without engaging with defendants' evidence. It instead faulted defendants' expert for not expressly concluding Cassava was a meme stock and that the market was inefficient. But Stulz explained in his deposition that Cassava "may have been influenced by the meme phenomenon," based on a "number of indicia." The district court's approach is divorced from the "rigorous" assessment of all the evidence required when assessing market efficiency. *See Unger*, 401 F.3d at 322, 325; *Bratya SPRL*, 752 F. Supp. 3d at 60 (recognizing "indirect evidence of market inefficiency" should "be weighed against the indirect evidence of market efficiency that plaintiffs present" (citation modified)). By declining to evaluate defendants' evidence of market inefficiency in favor of a default application of the *Cammer*/*Krogman* factors, the district court abused its discretion. *See Sampson*, 83 F.4th at 419 (explaining district court abuses discretion by premising "legal analysis on an erroneous understanding of governing law" (internal quotation marks and citation omitted)). We make

no judgment about whether Cassava, based on that evidence, traded in an efficient or inefficient market.

* * *

The parties raise other significant questions that we decline to resolve in this appeal. The skids are greased for the district court to address those issues on remand. Predominance in a section 10(b) securities fraud case often turns on reliance, shown through the *Basic* presumption. But in assessing *Basic*'s requirement that the relevant securities traded in an efficient market, we reiterate that courts must assess evidence of both market efficiency and market inefficiency. The *Cammer*/*Krogman* factors are merely a tool to that end, not the whole project. We VACATE the class certification order and REMAND for proceedings consistent with this opinion. We also GRANT IN PART and DENY IN PART plaintiffs' motion for judicial notice, consistent with footnote 2.