UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK
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In re:

MEMORANDUM AND ORDER

LIBOR-Based Financial Instruments Antitrust Litigation.

11 MD 2262 (NRB)

This Document Applies to:

Exchange-Based Plaintiff Action 11 Civ. 2613 (NRB)

OTC Plaintiff Action 11 Civ. 5450 (NRB)

Lender Plaintiff Action 12 Civ. 5723 (NRB)

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NAOMI REICE BUCHWALD
UNITED STATES DISTRICT JUDGE

LIBOR VII

Table of Contents

I. Introduction.. 3
II. General Legal Standards.............................. 4
1. Class Certification.................................. 4
1.1. Standing.. 5
1.2. Rule 23(a)...................................... 8
1.3. Rule 23(b)(3).................................. 12
1.4. Ascertainability............................... 17
1.5. Modifications to the Class Definition.......... 18
2. Expert Opinion..................................... 23
2.1. The Daubert Standard........................... 23
2.2. Application at Class Certification............. 33
III. Exchange-Based Action.............................. 37
1. Rabobank's Daubert Motions......................... 41
1.1. Dr. Seyhun..................................... 41
1.2. Dr. Netz....................................... 78
1.3. Mr. Beevers.................................... 95

1.4. Mr. Miller 125
2. Exchange Plaintiffs' Daubert Motions 130
2.1. Dr. Culp 130
2.2. Dr. Hubbard 142
2.3. Dr. Willig 149
3. Trader-Based Manipulation Class 172
3.1. "Fail-Safe" Class Definition 173
3.2. Standing 178
3.3. Ascertainability 183
3.4. Rule 23(a) 184
3.5. Predominance 199
3.6. Superiority 211
3.7. Modification of the Class Definition 215
3.8. Conclusion 219
4. Suppression Class 219
4.1. Class Definition 221
4.2. Ascertainability 222
4.3. Rule 23(a) 222
4.4. Predominance 226
4.5. Superiority 236
4.6. Conclusion 238
IV. Lender Action 239
1. Daubert Motions 240
1.1. Dr. Webb 240
1.2. Dr. Willig 249
2. Class Certification 256
2.1. Rule 23(a) 256
2.2. Ascertainability 269
2.3. Predominance 270
2.4. Superiority 294
2.5. Conclusion 297
V. OTC Action 298

1. Daubert Motion against Dr. Stiglitz 301
2. Class Certification 305
2.1. Standing.. 305
2.2. Rule 23(a)...................................... 308
2.3. Predominance.................................... 320
2.4. Modification of the Class Definition............... 348
2.5. Superiority..................................... 358
2.6. Conclusion...................................... 360
VI. Interlocutory Appealability............................ 362
VII. Conclusion.. 365

I. INTRODUCTION

After more than six years of litigation and six substantial opinions[1] considering extensively the nature of LIBOR and its alleged manipulation,[2] we consider in this, our seventh major opinion, whether three of the cases consolidated into this multidistrict litigation should proceed as class actions: the Exchange-Based action, Metzler Investment GmbH v. Credit Suisse Group AG, No. 11 Civ. 2613; the Lender action, Berkshire Bank v.

[1] In re LIBOR-Based Fin. Instruments Antitrust Litig. ("LIBOR VI"), 2016 WL 7378980 (S.D.N.Y. Dec. 20, 2016), ECF No. 1676; In re LIBOR-Based Fin. Instruments Antitrust Litig. ("LIBOR V"), 2015 WL 6696407 (S.D.N.Y. Nov. 3, 2015), ECF No. 1234; In re LIBOR-Based Fin. Instruments Antitrust Litig. ("LIBOR IV"), 2015 WL 6243526 (S.D.N.Y. Oct. 20, 2015), ECF No. 1222, aff'd in part, vacated and remanded in part sub nom. Charles Schwab Corp. v. Bank of Am. Corp. ("Schwab"), No. 16-1189-cv, --- F.3d ---, 2018 WL 1022541 (2d Cir. Feb. 23, 2018); In re LIBOR-Based Fin. Instruments Antitrust Litig. ("LIBOR III"), 27 F. Supp. 3d 447 (S.D.N.Y. 2014), ECF No. 568; In re LIBOR-Based Fin. Instruments Antitrust Litig. ("LIBOR II"), 962 F. Supp. 2d 606 (S.D.N.Y. 2013), ECF No. 389; In re LIBOR-Based Fin. Instruments Antitrust Litig. ("LIBOR I"), 935 F. Supp. 2d 666 (S.D.N.Y. 2013), ECF No. 286, vacated and remanded sub nom. Gelboim v. Bank of Am. Corp. ("Gelboim"), 823 F.3d 759 (2d Cir. 2016).

[2] "Even where we omit to use a word such as 'alleged' in reference to claims against defendants, nothing in this opinion should be taken as a finding that any defendant manipulated LIBOR, that any defendant committed any other form of wrongdoing, or that any plaintiff suffered injury." LIBOR V, 2015 WL 6696407, at *1 n.1, slip op. at *3 n.1.

Bank of America Corp., No. 12 Civ. 5723; and the Over-the-Counter (OTC) action, Mayor of Baltimore v. Credit Suisse Group AG, No. 11 Civ. 5450. For the reasons stated below, Exchange plaintiffs' and Berkshire Bank's motions for certification of an Exchange-based class and a Lender class are denied. We grant in part and deny in part OTC plaintiffs' motion, certifying a class only as to the antitrust claims in that action.

In litigating the question of class certification, the parties have also filed ten motions to exclude expert testimony under the admissibility standards set forth in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993). The only one-line summary we can provide is that some of the Daubert motions are granted, some are denied, and others are granted in part and denied in part, as set forth in extensive detail below.

II. GENERAL LEGAL STANDARDS

We first set forth the general legal standards applicable to our resolution of the pending motions.

1. Class Certification

"The class action is 'an exception to the usual rule that litigation is conducted by and on behalf of the individual named parties only.'" Wal-Mart Stores, Inc. v. Dukes, 564 U.S. 338, 348 (2011) (quoting Califano v. Yamasaki, 442 U.S. 682, 700–01 (1979)). "To come within the exception, a party seeking to maintain a class action 'must affirmatively demonstrate his compliance' with Rule

23." Comcast Corp. v. Behrend, 569 U.S. 27, 33 (2013) (quoting Dukes, 564 U.S. at 350). When presented with a motion for class certification, we are to "assess all of the relevant evidence admitted at the class certification stage and determine whether each Rule 23 requirement has been met, just as [we] would resolve a dispute about any other threshold prerequisite for continuing a lawsuit." In re Initial Pub. Offerings Sec. Litig. ("In re IPO"), 471 F.3d 24, 42 (2d Cir. 2006). This assessment necessarily entails the resolution of "factual disputes relevant to each Rule 23 requirement," an obligation that "is not lessened by overlap between a Rule 23 requirement and a merits issue, even a merits issue that is identical with a Rule 23 requirement." Id. at 41; see also Dukes, 564 U.S. at 351 (noting that the "rigorous analysis" of the Rule 23 requirements "will entail some overlap with the merits of the plaintiff's underlying claim"). "[T]he preponderance of the evidence standard applies to evidence proffered to establish Rule 23's requirements." Teamsters Local 445 Freight Div. Pension Fund v. Bombardier Inc., 546 F.3d 196, 202 (2d Cir. 2008).

1.1. Standing

Before considering the Rule 23 requirements, we first consider threshold standing issues. "Standing" in the class action context refers to two related but analytically distinct doctrines separated by a "murky line": "traditional Article III standing" on

the one hand and "so-called 'class standing'" on the other. Ret. Bd. of the Policemen's Annuity & Benefit Fund v. Bank of N.Y. Mellon ("RBPA"), 775 F.3d 154, 160 (2d Cir. 2014); see also LIBOR III, 27 F. Supp. 3d at 480-82, slip op. at *64-67.

Article III standing is assessed using the oft-recited three-part formulation set forth by the Supreme Court: a "plaintiff must have (1) suffered an injury in fact, (2) that is fairly traceable to the challenged conduct of the defendant, and (3) that is likely to be redressed by a favorable judicial decision." Spokeo, Inc. v. Robins, 136 S. Ct. 1540, 1547 (2016); see also LIBOR III, 27 F. Supp. 3d at 481, slip op. at *66 (citing Lujan v. Defs. of Wildlife, 504 U.S. 555, 560-61 (1992)). While an injury-in-fact must be "concrete and particularized" and "actual or imminent," Lujan, 504 U.S. at 560, "an injury-in-fact need not be capable of sustaining a valid cause of action," Denney v. Deutsche Bank AG, 443 F.3d 253, 264 (2d Cir. 2006). Rather, "the fact that an injury may be outweighed by other benefits, while often sufficient to defeat a claim for damages, does not negate [Article III] standing." Id. at 265.

In the class action context, the Second Circuit has made clear that "no class may be certified that contains members lacking Article III standing" and that any "class must therefore be defined in such a way that anyone within it would have [Article III] standing." Id. at 264. However, when presented with a putative

class, "[w]e do not require that each member . . . submit evidence of personal standing." Id. at 263. Rather, "only one of the named Plaintiffs is required to establish standing in order to seek relief on behalf of the entire class." Cent. States Se. & Sw. Areas Health & Welfare Fund v. Merck-Medco Managed Care, L.L.C., 504 F.3d 229, 241 (2d Cir. 2007) (emphasis added). "[P]assive members need not make any individual showing of standing, because the standing issue focuses on whether the plaintiff is properly before the court, not whether represented parties or absent class members are properly before the court." Denney, 443 F.3d at 264 (alteration in original) (quoting 1 Herbert B. Newberg & Alba Conte, Newberg on Class Actions § 2:7 (4th ed. 2002)).

While only one named plaintiff need establish Article III standing and our analysis need not consider evidence from absent class members, we must nonetheless consider Article III standing as against each defendant. "[F]or every named defendant there must be at least one named plaintiff who can assert a claim directly against that defendant." LIBOR III, 27 F. Supp. 3d at 481, slip op. at *66 (emphasis omitted) (quoting NECA-IBEW Health & Welfare Fund v. Goldman Sachs & Co. ("NECA"), 693 F.3d 145, 159 (2d Cir. 2012)).

"[A]t that point, [Article III] standing is satisfied and only then will the inquiry shift to a class action analysis" and the question of class standing, which refers to a named plaintiff's

ability to assert claims on behalf of absent class members. NECA, 693 F.3d at 159 (quoting Merck-Medco, 504 F.3d at 241). "[I]n a putative class action, a plaintiff has class standing if he plausibly alleges (1) that he personally has suffered some actual injury as a result of the putatively illegal conduct of the defendant, and (2) that such conduct implicates the same set of concerns as the conduct alleged to have caused injury to other members of the putative class by the same defendants." RBPA, 775 F.3d at 161 (emphasis added) (alteration in original) (quoting NECA, 693 F.3d at 162). This standard, "derive[d] from constitutional standing principles" but also distinct from Article III standing itself, serves to insure that "the named plaintiff's litigation incentives are sufficiently aligned with those of the absent class members that the named plaintiff may properly assert claims on their behalf." Id. As the Second Circuit's formulation of the class standing test makes clear, class standing is assessed based on allegations rather than evidence. See, e.g., id. (holding that named plaintiffs had satisfied the first prong of the two-prong class standing test because "they ha[d] adequately pled that they have personally suffered an actual injury as a result of [the defendant's] putatively illegal conduct").

1.2. Rule 23(a)

To proceed as a class action, each of the requirements of Rule 23(a) must be met. As relevant here, Rule 23(a) provides

that "[o]ne or more members of a class may sue . . . as representative parties on behalf of all members only if: (1) the class is so numerous that joinder of all members is impracticable; (2) there are questions of law or fact common to the class; (3) the claims . . . of the representative parties are typical of the claims . . . of the class; and (4) the representative parties will fairly and adequately protect the interests of the class." Fed. R. Civ. P. 23(a). These requirements are generally referred to as numerosity, commonality, typicality, and adequacy of representation.

Rule 23(a)(1) requires the class to be sufficiently numerous such that "joinder of all members is impracticable," Fed. R. Civ. P. 23(a)(1), but this requirement "does not mandate that joinder of all parties be impossible," Merck-Medco, 504 F.3d at 244. Though "the numerosity inquiry is not strictly mathematical," numerosity "is presumed for classes larger than forty members." Pa. Pub. Sch. Emps.' Ret. Sys. v. Morgan Stanley & Co., 772 F.3d 111, 120 (2d Cir. 2014). Plaintiffs need not furnish "evidence of exact class size or identity of class members to satisfy the numerosity requirement." Robidoux v. Celani, 987 F.2d 931, 935 (2d Cir. 1993).

The next requirement, commonality, demands that there be "questions of law or fact common to the class." Fed. R. Civ. P. 23(a)(2). A question is common to the class if it is "capable of

classwide resolution -- which means that determination of its truth or falsity will resolve an issue that is central to the validity of each one of the claims in one stroke." Dukes, 564 U.S. at 350. That is, "[c]ommonality requires the plaintiff to demonstrate that the class members 'have suffered the same injury,'" which requires establishing more than the mere fact that class members "have all suffered a violation of the same provision of law." Id. at 349-50 (quoting Gen. Tel. Co. of the Sw. v. Falcon, 457 U.S. 147, 157 (1982)). However, "[w]here the same conduct or practice by the same defendant gives rise to the same kind of claims from all class members, there is a common question." Johnson v. Nextel Commc'ns, Inc., 780 F.3d 128, 137 (2d Cir. 2015) (quoting Suchanek v. Sturm Foods, Inc., 764 F.3d 750, 756 (7th Cir. 2014)).

Third, "[t]o establish typicality under Rule 23(a)(3), the party seeking certification must show that 'each class member's claim arises from the same course of events and each class member makes similar legal arguments to prove the defendant's liability.'" In re Flag Telecom Holdings, Ltd. Sec. Litig., 574 F.3d 29, 35 (2d Cir. 2009) (quoting Robidoux, 987 F.2d at 936). This requirement is related to, but distinct from, the requirement of class standing. See RBPA, 775 F.3d at 161 (citing NECA, 693 F.3d at 158 n.9). "Typicality requires that 'the disputed issue[s] of law or fact occupy essentially the same degree of centrality to the named plaintiff's claim as to that of other members of the

proposed class.'" Mazzei v. Money Store, 829 F.3d 260, 272 (2d Cir. 2016) (internal quotation marks omitted) (quoting Caridad v. Metro-N. Commuter R.R., 191 F.3d 283, 293 (2d Cir. 1999), overruled on other grounds by In re IPO, 471 F.3d 24). Accordingly, typicality is not satisfied "where a putative class representative is subject to unique defenses which threaten to become the focus of the litigation." Baffa v. Donaldson, Lufkin & Jenrette Sec. Corp., 222 F.3d 52, 59 (2d Cir. 2000) (quoting Gary Plastic Packaging Corp. v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 903 F.2d 176, 180 (2d Cir. 1990)). "[T]he defendant need not show at the certification stage that [a] unique defense will prevail, only that it is meritorious enough to require the plaintiff to devote considerable time to rebut the unique defense," In re Digital Music Antitrust Litig., 321 F.R.D. 64, 97 (S.D.N.Y. 2017) (quoting Lapin v. Goldman Sachs & Co., 254 F.R.D. 168, 179 (S.D.N.Y. 2008)). "However, the court should not disqualify a named plaintiff based upon any groundless, far-fetched defense that the defendant manages to articulate." Lapin, 254 F.R.D. at 179 (quoting Hallet v. Li & Fung Ltd., No. 95 Civ. 8917 (JSM), 1997 WL 621111, at *3 (S.D.N.Y. Oct. 6, 1997)).

Finally, "the representative parties [must] fairly and adequately protect the interests of the class." Fed. R. Civ. P. 23(a)(4). This requirement overlaps in part with those of commonality and typicality, but adequacy of representation "also

raises concerns about the competency of class counsel and conflicts of interest." Dukes, 564 U.S. at 349 n.5 (quoting Falcon, 457 U.S. at 158 n.13); see also Baffa, 222 F.3d at 60 ("Generally, adequacy of representation entails inquiry as to whether: 1) plaintiff's interests are antagonistic to the interest of other members of the class and 2) plaintiff's attorneys are qualified, experienced and able to conduct the litigation."). Accordingly, an analysis of adequacy of representation considers "whether the class representative has adequate incentive to pursue the class's claim, and whether some difference between the class representative and some class members might undermine that incentive." In re Payment Card Interchange Fee & Merch. Disc. Antitrust Litig., 827 F.3d 223, 231 (2d Cir. 2016). However, "[n]ot every conflict among subgroups of a class will prevent class certification -- the conflict must be 'fundamental' to violate Rule 23(a)(4)." In re Literary Works in Elec. Databases Copyright Litig., 654 F.3d 242, 249 (2d Cir. 2011).

1.3. Rule 23(b)(3)

In addition to satisfying each requirement of Rule 23(a), a putative class must also meet "[o]ne of the bases for certification under Rule 23(b)." Roach v. T.L. Cannon Corp., 778 F.3d 401, 405 (2d Cir. 2015). Each class of plaintiffs here seeks to proceed under Rule 23(b)(3), which provides that a class action may proceed as such if "the court finds that the questions of law or fact

common to class members predominate over any questions affecting only individual members, and that a class action is superior to other available methods for fairly and efficiently adjudicating the controversy." Fed. R. Civ. P. 23(b)(3) (emphasis added). Predominance and superiority must each be satisfied. See Sykes v. Mel S. Harris & Assocs., 780 F.3d 70, 82 (2d Cir. 2015) (referring to Rule 23(b)(3) as a "disjunctive inquiry"); see also Roach, 778 F.3d at 405.

"The Rule 23(b)(3) predominance inquiry tests whether proposed classes are sufficiently cohesive to warrant adjudication by representation." Amchem Prods., Inc. v. Windsor, 521 U.S. 591, 623 (1997). It serves to "ensure[] that the class will be certified only when it would 'achieve economies of time, effort, and expense, and promote . . . uniformity of decision as to persons similarly situated, without sacrificing procedural fairness or bringing about other undesirable results.'" Cordes & Co. Fin. Servs., Inc. v. A.G. Edwards & Sons, Inc., 502 F.3d 91, 104 (2d Cir. 2007) (omission in original) (quoting Amchem, 521 U.S. at 615).

The predominance analysis entails "careful scrutiny to the relation between common and individual questions in a case." Tyson Foods, Inc. v. Bouaphakeo, 136 S. Ct. 1036, 1045 (2016). "An individual question is one where 'members of a proposed class will need to present evidence that varies from member to member,' while

a common question is one where 'the same evidence will suffice for each member to make a prima facie showing [or] the issue is susceptible to generalized, class-wide proof.'" Id. (alterations in original) (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:50 (5th ed. 2012)). As its name suggests, "[t]he predominance requirement calls only for predominance, not exclusivity, of common questions." In re Visa Check/MasterMoney Antitrust Litig., 280 F.3d 124, 140 (2d Cir. 2001) (quoting In re Alcoholic Beverages Antitrust Litig., 95 F.R.D. 321, 328 (E.D.N.Y. 1982), overruled on other grounds by In re IPO, 471 F.3d 24. The inquiry is inherently comparative, taking into account the weight and significance of common and individual issues rather than simply their numbers. See, e.g., In re Petrobras Sec., 862 F.3d 250, 268 (2d Cir. 2017) ("[P]redominance is a comparative standard.").

The existence of a single common question suffices to establish commonality, but "Rule 23(b)(3)'s predominance requirement is 'more demanding than Rule 23(a).'" Nextel, 780 F.3d at 138 (quoting Comcast, 569 U.S. at 34)). Ultimately, we ask "whether issues susceptible to generalized proof outweigh individual issues," Sykes, 780 F.3d at 88 (internal quotation marks omitted) (quoting McLaughlin v. Am. Tobacco Co., 522 F.3d 215, 231 (2d Cir. 2008), abrogated on other grounds by Bridge v. Phx. Bond & Indem. Co., 553 U.S. 639 (2008)), or put differently, whether "common issues are 'more substantial' than individual ones," Myers

v. Hertz Corp., 624 F.3d 537, 549 (2d Cir. 2010) (quoting Moore v. PaineWebber, Inc., 306 F.3d 1247, 1252 (2d Cir. 2002)). In conducting this balancing test, we "assess (1) the 'elements of the claims and defenses to be litigated,' and (2) 'whether generalized evidence could be offered to prove those elements on a class-wide basis or whether individualized proof will be needed to establish each class member's entitlement to relief.'" Nextel, 780 F.3d at 138 (quoting 1 McLaughlin on Class Actions § 5:23 (11th ed. 2014)); see also Erica P. John Fund, Inc. v. Halliburton Co. ("Halliburton I"), 563 U.S. 804, 809 (2011) ("Considering whether 'questions of law or fact common to class members predominate' begins, of course, with the elements of the underlying cause of action." (quoting Fed. R. Civ. P. 23(b)(3))). "This analysis is 'more[] qualitative than quantitative,' and must account for 'the nature and significance of the material common and individual issues in the case.'" In re Petrobras, 862 F.3d at 271 (alterations in original) (citations omitted) (quoting 1 William B. Rubenstein, Newberg on Class Actions § 4:50 (5th ed. 2012)).

In addition to establishing the predominance of common questions, plaintiffs must also establish "that a class action is superior to other available methods for fairly and efficiently adjudicating the controversy." Fed. R. Civ. P. 23(b)(3). Rule 23(b)(3) sets forth four "matters pertinent" to the superiority inquiry: "(A) the class members' interests in individually

controlling the prosecution or defense of separate actions; (B) the extent and nature of any litigation concerning the controversy already begun by . . . class members; (C) the desirability or undesirability of concentrating the litigation of the claims in the particular forum; and (D) the likely difficulties in managing a class action." Fed. R. Civ. P. 23(b)(3). "[W]hile these factors, structurally, apply to both predominance and superiority, they more clearly implicate the superiority inquiry." Sykes, 780 F.3d at 82; see also In re Am. Int'l Grp., Inc. Sec. Litig., 689 F.3d 229, 242 (2d Cir. 2012) ("[T]he plain text of Rule 23(b)(3) states that one of the 'matters pertinent' to a finding of predominance is 'the likely difficulties in managing a class action.'" (quoting Fed. R. Civ. P. 23(b)(3))).

"While Rule 23(b)(3) sets out four individual factors for courts to consider, manageability 'is, by the far, the most critical concern in determining whether a class action is a superior means of adjudication.'" Sykes, 780 F.3d at 82 (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:72 (5th ed. 2014)). Despite the importance of manageability, the Second Circuit has also cautioned that "failure to certify an action under Rule 23(b)(3) on the sole ground that it would be unmanageable is disfavored and should be the exception rather than the rule." In re Petrobras, 862 F.3d at 268 (quoting In re Visa Check, 280 F.3d at 140). Ultimately, these factors are "nonexhaustive" and

nonexclusive, Amchem, 521 U.S. at 615, and "assessing superiority is a fact-specific inquiry," In re Vivendi, S.A., Sec. Litig., 838 F.3d 223, 264 (2d Cir. 2016).

1.4. Ascertainability

In addition to the express requirements of Rule 23(a) and Rule 23(b), the Second Circuit has "recognized an 'implied requirement of ascertainability' in Rule 23." Brecher v. Republic of Argentina, 806 F.3d 22, 24 (2d Cir. 2015) (quoting In re IPO, 471 F.3d at 30). Though "the touchstone of ascertainability is whether the class is 'sufficiently definite so that it is administratively feasible for the court to determine whether a particular individual is a member,'" id. (quoting 7A Charles A. Wright et al., Federal Practice & Procedure § 1760 (3d ed. 1998)), the Second Circuit has clarified that ascertainability does not itself require that a proposed class be administratively feasible, see In re Petrobras, 862 F.3d at 268-69. Rather, ascertainbility imposes only a "modest threshold requirement" that asks only "whether a proposed class is defined using objective criteria that establish a membership with definite boundaries." Id. at 269. It "will only preclude certification if a proposed class definition is indeterminate in some fundamental way." Id.

Given that ascertainability is "distinct from the predominance requirement," id. at 264 n.15 (quoting In re IPO, 471 F.3d at 45), we do not read In re Petrobras to preclude a

consideration of administrative feasibility concerns in analyzing predominance and superiority. Indeed, In re Petrobras reasoned that a freestanding administrative feasibility requirement as part of ascertainability would be duplicative of the manageability factor of the superiority inquiry (if administrative feasibility were considered comparatively rather than absolutely), id. at 268, and would "risk[] encroaching on territory belonging to the predominance requirement, such as classes that require highly individualized determinations of member eligibility," id. (citing Mazzei, 829 F.3d at 272). Accordingly, to the extent that any of the putative classes present administrative feasibility concerns, we will consider those issues not as part of the ascertainability analysis, but as part of the Rule 23(b)(3) predominance and superiority inquiries.

1.5. Modifications to the Class Definition

As we have recognized in denying defendants' motions to strike plaintiffs' class-action allegations, "[a] court is not bound by the class definition proposed in the complaint and should not dismiss the action simply because the complaint seeks to define the class too broadly." May 13, 2016 Order, 2016 WL 2851333, at *2, slip op. at *3 (quoting Robidoux, 987 F.2d at 937), ECF No. 1408. Rule 23(c)(4) and Rule 23(c)(5) provide two specific means of modification, but a court also "has broad discretion to modify

the class definition as appropriate." 5 Moore's Federal Practice § 23.21[6] (3d ed. 2017).

Rule 23(c)(4) provides that "[w]hen appropriate, an action may be brought or maintained as a class action with respect to particular issues." Fed. R. Civ. P. 23(c)(4). The rule may be applied "to certify a class on a particular issue even if the action as a whole does not satisfy Rule 23(b)(3)'s predominance requirement." In re Nassau Cty. Strip Search Cases, 461 F.3d 219, 225 (2d Cir. 2006). Additionally, "[i]f an action includes multiple claims, one or more of which might qualify as a certifiable class claim, the court may separate such claims from other claims in the action and certify them under the provisions of subsection (c)(4) of Rule 23." 1 McLaughlin on Class Actions § 4:44 (14th ed.) (Westlaw 2017) (internal quotation marks omitted); see also, e.g., In re AMF Bowling Sec. Litig., No. 99 Civ. 3023 (DC), 2002 WL 461513 (S.D.N.Y. Mar. 26, 2002).

The Second Circuit has instructed that "[d]istrict courts should take full advantage of this provision to certify separate issues," Robinson v. Metro-N. Commuter R.R. Co., 267 F.3d 147, 167 (2d Cir. 2001) (alterations incorporated) (internal quotation marks omitted), abrogated on other grounds by Dukes, 564 U.S. 338, but has also recognized that issue certification may be inappropriate if a "number of questions . . . would remain for individual adjudication" or if issue certification "would not

materially advance the litigation because it would not dispose of larger issues" relevant to the case. McLaughlin, 522 F.3d at 234.

That is, "the rule should not be invoked merely to postpone confronting difficult certification questions," 7AA Charles A. Wright et al., Federal Practice & Procedure § 1790 (3d ed.) (Westlaw 2017), and indeed, overly aggressive application of Rule 23(c)(4) would nullify Rule 23(b)(3)'s predominance requirement, as a class may be certified only as to the common issues raised, cf. Castano v. Am. Tobacco Co., 84 F.3d 734, 745 n.21 (5th Cir. 1996) ("[T]he result would be automatic certification in every case where there is a common issue, a result that could not have been intended."). "[A] class action movant cannot gerrymander predominance by suggesting that only a single issue be certified for class treatment (in which, by definition, it will 'predominate')" when more substantial individual issues remain. 1 McLaughlin on Class Actions § 4:43 (14th ed.) (Westlaw 2017) (quoting Hyderi v. Wash. Mut. Bank, FA, 235 F.R.D. 390, 398 (N.D. Ill. 2006)).

Paralleling Rule 23(c)(4), Rule 23(c)(5) provides that "[w]hen appropriate, a class may be divided into subclasses that are each treated as a class under this rule." Fed. R. Civ. P. 23(c)(5).[3] For example, when conflicts exist between class

[3] Prior to the 2007 amendments to the Federal Rules of Civil Procedure, Rule 23(c)(4) encompassed the current version of Rule 23(c)(4) as Rule

members, they "can be cured by dividing the class into separate 'homogeneous subclasses . . . with separate representation to eliminate conflicting interests.'" In re Literary Works, 654 F.3d at 249-50 (quoting Ortiz v. Fibreboard Corp., 527 U.S. 815, 856 (1999)). However, the placement of plaintiffs into "multiple subclasses . . . can generate unnecessary administrative inefficiencies," 3 William B. Rubenstein, Newberg on Class Actions § 7:30 (5th ed.) (Westlaw 2017) (footnote omitted), and "at some point there must be an end to reclassification," Ortiz, 527 U.S. at 857; see also In re Literary Works, 654 F.3d at 257 (describing seven subclasses as "surely beyond the point at which 'reclassification with separate counsel' must end"). "The necessity of a large number of subclasses may indicate that common questions do not predominate," and "[t]he creation of a number of subclasses . . . may make the case unmanageable [and] may defeat the superiority requirement." Manual for Complex Litigation § 21.23 (4th ed. 2004).

Rule 23(c)(4) and Rule 23(c)(5) are phrased permissively. Consistent with the text of the rule, "[t]he court . . . is not obligated to implement Rule 23(c)(4) [and Rule 23(c)(5)] on its

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23(c)(4)(A) and the current version of Rule 23(c)(5) as Rule 23(c)(4)(B). In its entirety, the pre-2007 version of Rule 23(c)(4) read as follows: "When appropriate (A) an action may be brought or maintained as a class action with respect to particular issues, or (B) a class may be divided into subclasses and each subclass treated as a class, and the provisions of this rule shall then be construed and applied accordingly." 5 Moore's Federal Practice § 23App.07[1] (3d ed. 2017).

own initiative" by certifying classes only as to certain issues or creating subclasses. Lundquist v. Sec. Pac. Auto. Fin. Servs. Corp., 993 F.2d 11, 14 (2d Cir. 1993) (citing U.S. Parole Comm'n v. Geraghty, 445 U.S. 388, 408 (1980)); see also 7AA Charles A. Wright et al., Federal Practice & Procedure § 1790 (3d ed.) (Westlaw 2017) ("[T]he trial court has no independent obligation to utilize Rule 23(c)(4) sua sponte."). It remains "plaintiff's burden to show how the action may be [modified] to avoid certification problems." Lundquist, 993 F.3d at 14 (quoting Geraghty, 445 U.S. at 408).[4] Similarly, the decision to otherwise modify a class definition is a discretionary one. See Mazzei v. Money Store, 288 F.R.D. 45, 55 (S.D.N.Y. 2012) ("[C]ourts have the discretion to construe the complaint or redefine the class to bring it within the scope of Rule 23." (internal quotation marks omitted)); see also 7A Charles A. Wright et al., Federal Practice & Procedure § 1759 (3d ed.) (Westlaw 2017).

Accordingly, in order to avoid "the perverse effect of turning defense counsel and the Court into plaintiffs' counsel's co-counsel, with plaintiffs waiting to see what objections defendants raise and how the Court rules on those objections and then amending their [proposed class definitions] as necessary based on what they

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[4] We accordingly do not read Robidoux's statement that a court "should not dismiss the action simply because the complaint seeks to define the class too broadly," 987 F.2d at 937, to require that a court explore every avenue in order to certify a class in some form in each case. See Lundquist, 993 F.2d at 15 ("[T]he district court's refusal to shoulder what, in the final analysis, is plaintiff's burden cannot be regarded in this case as an abuse of discretion.").

learned in the process," LIBOR II, 962 F. Supp. 2d at 626-27, slip op. at *42, we will consider issue certification under Rule 23(c)(4), subclass creation under Rule 23(c)(5), and other modifications of the proposed class definitions under our discretionary authority only where plaintiffs have set forth such proposals in sufficient detail.

2. Expert Opinion

2.1. The Daubert Standard

Expert testimony is admissible under Rule 702 of the Federal Rules of Evidence, which provides in full:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

Under the Supreme Court's decisions in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993), and Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999), we have a "'gatekeeping' function under Rule 702," under which we are "charged with 'the task of ensuring that an expert's testimony both rests on a reliable foundation and is relevant to the task at hand.'" Amorgianos v. Nat'l R.R. Passenger Corp., 303 F.3d 256, 265 (2d Cir. 2002) (quoting Daubert, 509 U.S. at 597). "[T]he proponent of expert testimony has the burden of establishing by a preponderance of the

evidence that the admissibility requirements of Rule 702 are satisfied." United States v. Williams, 506 F.3d 151, 160 (2d Cir. 2007).

The Second Circuit has distilled Rule 702's requirements into three broad criteria: (1) qualifications, (2) reliability, and (3) relevance and assistance to the trier of fact. See Nimely v. City of New York, 414 F.3d 381, 396-97 (2d Cir. 2005).

2.1.1. Qualifications

When presented with expert testimony, we first consider "the threshold question of whether a witness is 'qualified as an expert by knowledge, skill, experience, training, or education' to render his or her opinions." Id. at 396 n.11 (quoting Fed. R. Evid. 702). We analyze "the totality of the witness's background to determine whether he or she exhibits any one or more of the qualifications listed in Rule 702 . . . with respect to a relevant field." Washington v. Kellwood Co., 105 F. Supp. 3d 293, 304 (S.D.N.Y. 2015).

As Rule 702's use of the disjunctive suggests, "any one of [the] five forms of qualifications will satisfy the rule." Tiffany (NJ) Inc. v. eBay, Inc., 576 F. Supp. 2d 457, 458 (S.D.N.Y. 2007). "A formal education in a particular field is sufficient to qualify a witness as an expert" as a general matter, such that a "lack of extensive practical experience directly on point does not necessarily preclude [the] expert from testifying." Cary Oil Co.

v. MG Ref. & Mktg., Inc., No. 99 Civ. 1725 (VM), 2003 WL 1878246, at *2 (S.D.N.Y. Apr. 11, 2003) (internal quotation marks omitted). Similarly, "a lack of formal training does not necessarily disqualify an expert from testifying if he or she has equivalent relevant practical experience." In re Rezulin Prods. Liab. Litig., 309 F. Supp. 2d 531, 559 (S.D.N.Y. 2004).

Indeed, "[c]ourts in this circuit have noted that an expert should not be required to satisfy an overly narrow test of his own qualifications." United States v. Tuzman, No. 15 Cr. 536 (PGG), 2017 WL 6527261, at *9 (S.D.N.Y. Dec. 18, 2017) (collecting cases) (quoting Arista Records LLC v. Lime Grp. LLC, No. 06 Civ. 5936 (KMW), 2011 WL 1674796, at *3 (S.D.N.Y. May 2, 2011)). "[T]he Second Circuit [has] allowed an expert to testify as to matters within his general expertise even though he lacked qualifications as to certain technical matters within that field." Pension Comm. of the Univ. of Montreal Pension Plan v. Banc of Am. Sec., LLC, 691 F. Supp. 2d 448, 457 (S.D.N.Y. 2010) (citing McCullock v. H.B. Fuller Co., 61 F.3d 1038, 1042-43 (2d Cir. 1995)).

We then "compare the area in which the witness has superior knowledge, education, experience, or skill with the subject matter of the proffered testimony," which must overlap. United States v. Tin Yat Chin, 371 F.3d 31, 40 (2d Cir. 2004). "[I]t is worth emphasizing that, because a witness qualifies as an expert with respect to certain matters or areas of knowledge, it by no means

follows that he or she is qualified to express expert opinions as to other fields." Nimely, 414 F.3d at 399 n.13. Conversely, an expert's lack of qualifications as to some of the opinions offered does not render inadmissible the opinions that he is qualified to offer.

2.1.2. Reliability

We next determine "whether the proffered testimony has a sufficiently 'reliable foundation' to permit it to be considered." Campbell ex rel. Campbell v. Metro. Prop. & Cas. Ins. Co., 239 F.3d 179, 184 (2d Cir. 2001) (quoting Daubert, 509 U.S. at 597). "In this inquiry, [we] should consider the indicia of reliability identified in Rule 702, namely, (1) that the testimony is grounded on sufficient facts or data; (2) that the testimony 'is the product of reliable principles and methods'; and (3) that 'the witness has applied the principles and methods reliably to the facts of the case.'" Amorgianos, 303 F.3d at 265 (quoting Fed. R. Evid. 702).

The Supreme Court has identified a number of factors that may be considered in assessing reliability: "(1) whether a theory or technique 'can be (and has been) tested,' (2) 'whether the theory or technique has been subjected to peer review and publication,' (3) a technique's 'known or potential rate of error,' and 'the existence and maintenance of standards controlling the technique's operation,' and (4) whether a particular technique or theory has gained 'general acceptance' in the relevant scientific community."

Id. at 266 (citations omitted) (quoting Daubert, 509 U.S. at 593-94). These factors are not a "definitive checklist or test," Daubert, 509 U.S. at 593, as "the gatekeeping inquiry must be tied to the facts of a particular case," Kumho Tire, 526 U.S. at 150 (internal quotation marks omitted), and "will necessarily vary from case to case," Amorgianos, 303 F.3d at 266. "[T]he law grants a district court the same broad latitude when it decides how to determine reliability as it enjoys in respect to its ultimate reliability determination." Restivo v. Hessemann, 846 F.3d 547, 576 (2d Cir. 2017) (emphasis omitted) (quoting Kumho Tire, 526 U.S. at 142).[5] Accordingly, "[i]n assessing the reliability of an expert opinion, a resort to common sense is not inappropriate." Johnson Elec. N. Am. Inc. v. Mabuchi Motor Am. Corp., 103 F. Supp. 2d 268, 286 (S.D.N.Y. 2000).

Though "flexible," the reliability inquiry "must focus on the principles and methodology employed by the expert, without regard to the conclusions the expert has reached or [our] belief as to the correctness of those conclusions." Amorgianos, 303 F.3d at 266. The expert's methodology is to be assessed step-by-step, and

[5] "While the gatekeeping function requires the district court to ascertain the reliability of [an expert's] methodology, it does not necessarily require that a separate hearing be held in order to do so." Williams, 506 F.3d at 161. Because the parties' Daubert motions have been extensively briefed and the record is well-developed, we conclude that the "formality of a separate hearing [is] not required." Id.; see also In re U.S. Foodservice Inc. Pricing Litig., 729 F.3d 108, 130 (2d Cir. 2013) ("[E]ven though the district court did not conduct a Daubert hearing, it considered the admissibility of the expert testimony on the papers.").

"it is critical that an expert's analysis be reliable at every step." Id. at 267. "[A]ny step that renders the analysis unreliable under the Daubert factors renders the expert's testimony inadmissible." Id. (emphasis omitted) (quoting In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 745 (3d Cir. 1994)).

"But conclusions and methodology are not entirely distinct from one another." Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997). "[N]othing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the ipse dixit of the expert," and "[a] court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." Id. That is, "when an expert opinion is based on data, a methodology, or studies that are simply inadequate to support the conclusions reached, Daubert and Rule 702 mandate the exclusion of that unreliable opinion testimony." Amorgianos, 303 F.3d at 266.

We offer three additional observations regarding the incomplete distinction between "methodology" on the one hand and "conclusions" and "results" on the other. First, a challenge to an expert's methodology will necessarily call into question the conclusions derived from the application of that methodology. Such a challenge does not impermissibly attack an expert's results simply because those results are collaterally damaged by the challenge directed towards the expert's methodology.

Second, robustness testing of an expert's methodology -- by applying that methodology to different data or with different assumptions and examining the results produced by the methodology so applied -- is not an impermissible challenge to the expert's results. Rather, this robustness and sensitivity testing relates directly to two of the Daubert factors articulated by the Supreme Court: whether the methodology "can be (and has been) tested" and the methodology's "known or potential rate of error." Daubert, 509 U.S. at 594. Robustness testing and sensitivity testing that produces contradictory or otherwise implausible results strongly suggest that a methodology has been insufficiently tested and that the methodology has a high potential rate of error.

Third, inconsistent results are an "indicia of unreliability" in an expert's methodologies. Lippe v. Bairnco Corp., 99 F. App'x 274, 279 (2d Cir. 2004). This principle is clearest in the context of inconsistent results produced by the same methodology. See, e.g., Louis Vuitton Malletier v. Dooney & Bourke, Inc., 525 F. Supp. 2d 558, 569 (S.D.N.Y. 2007) (finding "unexplained inconsistency between the results" produced by two iterations of the same methodology to be a basis for exclusion); United States v. Hermanek, 289 F.3d 1076, 1097 (9th Cir. 2002) ("Inconsistent results may be an indicator of unreliability."). However, it is no less applicable to multiple methodologies intended to measure the same phenomenon that ultimately produce inexplicably

inconsistent results. See Lippe, 99 F. App'x at 279; see also In re Paoli, 35 F.3d at 777 (identifying "inconsistent results" produced by two analyses as supporting the exclusion of an expert's evidence).

"When faced with expert testimony that contains both reliable and unreliable opinions, district courts often exclude only the unreliable testimony." In re Pfizer Inc. Sec. Litig., 819 F.3d 642, 665 (2d Cir. 2016). If "the unreliable portion of an opinion can easily be distinguished from testimony that could help the [trier of fact], it may be an abuse of discretion to throw the good out with the bad." Id. However, "[we] are 'not obligated to prune away all of the problematic' elements of an expert's proposed testimony 'to save the remaining portions, however small.'" Id. (quoting Bricklayers & Trowel Trades Int'l Pension Fund v. Credit Suisse Sec. (USA) LLC, 752 F.3d 82, 96 (1st Cir. 2014)).

2.1.3. Relevance and Assistance to the Factfinder

"Even after determining that a witness is 'qualified as an expert' to testify as to a particular matter, and that the opinion is based upon reliable data and methodology, Rule 702[(a)] requires the district court to make a third inquiry: whether the expert's testimony . . . will 'assist the trier of fact'" in understanding the evidence or determining a fact in issue. Nimely, 414 F.3d at 397 (citations momitted) (quoting Fed. R. Evid 702). "This condition goes primarily to relevance," Daubert, 509 U.S. at 591,

as "[e]xpert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful," Raskin v. Wyatt Co., 125 F.3d 55, 66 (2d Cir. 1997) (alteration in original) (quoting Daubert, 509 U.S. at 591). Relevance, in turn, is assessed with respect to Rule 401 of the Federal Rules of Evidence: "whether it 'ha[s] any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.'" Campbell, 239 F.3d at 184 (alteration in original) (quoting Fed. R. Evid. 401).

Accordingly, the Second Circuit has "consistently held . . . that expert testimony that usurps either the role of the trial judge" in determining "the applicable law or the role of the [trier of fact] in applying that law to the facts before it" is inadmissible because it "by definition does not aid the [trier of fact] in making a decision," Nimely, 414 F.3d at 397 (quoting United States v. Bilzerian, 926 F.2d 1285, 1294 (2d Cir. 1991) and United States v. Duncan, 42 F.3d 97, 101 (2d Cir. 1994)) (alterations incorporated and citations omitted).

Similarly, "expert testimony that seeks to address 'lay matters which [the trier of fact] is capable of understanding and deciding without the expert's help' is not relevant and is therefore inadmissible." United States v. Jiau, 734 F.3d 147, 154 (2d Cir. 2013) (quoting Andrews v. Metro N. Commuter R.R. Co., 882

F.2d 705, 708 (2d Cir. 1989)). That is, testimony addressing lay matters is not based on an "expert's scientific, technical, or other specialized knowledge," and therefore fails to satisfy the first part of Rule 702(a). Accordingly, it is "inappropriate for experts to become a vehicle for factual narrative." SEC v. Tourre, 950 F. Supp. 2d 666, 675 (S.D.N.Y. 2013) (citing, inter alia, Highland Capital Mgmt., L.P. v. Schneider, 551 F. Supp. 2d 173, 187 (S.D.N.Y. 2008)).[6]

As with qualifications and reliability, we also disaggregate an expert's opinions before assessing their relevance and helpfulness: the fact that some of an expert's opinions are irrelevant does not render all of the expert's opinions inadmissible. Nonetheless, we need not overly fragment an expert's opinions in order to pick out only the relevant and helpful portions. Cf. In re Pfizer, 819 F.3d at 665.[7]

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[6] Further, as Tourre recognized, factual narrative offered by an expert is not "traceable to a reliable methodology" and therefore "fails to fulfill Daubert's most basic requirements" in a second way. 950 F. Supp. 2d at 675 (citing In re Rezulin, 309 F. Supp. 2d at 551).

[7] We note that expert opinion is additionally subject to the requirements of Rule 403 of the Federal Rules of Evidence and "may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury." Nimely, 414 F.3d at 397 (quoting Fed. R. Evid. 403). Accordingly, some courts have subjected expert opinion offered at, or prior to, the class certification to the strictures of Rule 403. See, e.g., Scott v. Chipotle Mexican Grill, Inc., 315 F.R.D. 33, 44, 47 (S.D.N.Y. 2016); In re Air Cargo Shipping Servs. Antitrust Litig., No. 06-md-1175 (JG)(VVP), 2014 WL 7882100 (E.D.N.Y. Oct. 15, 2014).

However, we decline to apply Rule 403 to expert testimony offered at this stage. Rule 403's concerns regarding unfair prejudice and misleading the jury have less force in the class certification context, where the Court serves as the trier of fact. Cf. Nimely, 414 F.3d at 397 (identifying "the uniquely important role that Rule 403 has to play in a district court's scrutiny of expert testimony, given the unique weight such evidence may have in a jury's deliberations" (emphasis added)).

2.2. Application at Class Certification

"Neither the Supreme Court nor the Second Circuit has definitely decided whether the Daubert standard governs the admissibility of expert evidence submitted at the class certification stage." Adkins v. Morgan Stanley, 307 F.R.D. 119, 148 (S.D.N.Y. 2015) (quoting Chen-Oster v. Goldman, Sachs & Co., 114 F. Supp. 3d 110, 114 (S.D.N.Y. 2015)). Indeed, the issue remains unsettled nationally and in this district. Compare, e.g., In re Blood Reagents Antitrust Litig., 783 F.3d 183, 187 (3d Cir. 2015) ("[A] plaintiff cannot rely on challenged expert testimony, when critical to class certification, to demonstrate conformity with Rule 23 unless the plaintiff also demonstrates, and the trial court finds, that the expert testimony satisfies the standard set out in Daubert."); Messner v. Northshore Univ. HealthSystem, 669 F.3d 802, 812-14 (7th Cir. 2012); Ellis v. Costco Wholesale Corp., 657 F.3d 970, 982 (9th Cir. 2011); Sher v. Raytheon Co., 419 F. App'x 887, 890-91 (11th Cir. 2011); and Ge Dandong v. Pinnacle Performance Ltd., No. 10 Civ. 8086 (JMF), 2013 WL 5658790, at *13 (S.D.N.Y. Oct. 17, 2013), with, e.g., In re Zurn Pex Plumbing Prods. Liab. Litig., 644 F.3d 604, 613 (8th Cir. 2011) ("The main purpose of Daubert exclusion is to protect juries from being swayed by dubious scientific testimony. That interest is not implicated at the class certification stage where the judge is the decision maker."), and In re Scotts EZ Seed Litig., 304 F.R.D. 397, 412 n.8

(S.D.N.Y. 2015) (analyzing "whether each of [the expert's] proposed methodologies satisfy Comcast" rather than conducting a Daubert analysis).

We are persuaded by the view that expert evidence submitted at the class certification stage is subject to the Daubert standard. First, the Supreme Court has suggested in dicta that Daubert applies, commenting that "the District Court concluded that Daubert did not apply to expert testimony at the certification stage of class-action proceedings. We doubt that is so . . . ." Dukes, 564 U.S. at 354. Not only has the Second Circuit characterized this statement as "suggesting that a Daubert analysis may be required at least in some circumstances," In re U.S. Foodservice Inc. Pricing Litig., 729 F.3d 108, 129 (2d Cir. 2013), but this statement (though dicta) is also "the only discussion of [the issue] by the Supreme Court of which we are aware" such that we consider it "to be persuasive authority here," Tiffany (NJ) Inc. v. eBay Inc., 600 F.3d 93, 108 (2d Cir. 2010).

Second, we interpret the Second Circuit's decisions in In re IPO, Bombardier, and In re U.S. Foodservice, as supporting a more searching examination of expert testimony offered at the class certification stage. See 1 McLaughlin on Class Actions § 3:14 (14th ed.) (Westlaw 2017) (describing the Second Circuit's "substantial expansion of the extent to which district courts may evaluate expert testimony on class certification" and citing,

inter alia, In re IPO and Bombardier). Though the Second Circuit did not decide in In re U.S. Foodservice whether or when a Daubert analysis forms a necessary component of a district court's rigorous analysis," it reasoned that "[i]n In re IPO, we disavowed our earlier statement that 'an expert's testimony may establish a component of a Rule 23 requirement simply by not being fatally flawed.'" In re U.S. Foodservice, 729 F.3d at 129-30 (quoting In re IPO, 471 F.3d at 41). Indeed, given the Second Circuit's direction that we consider "the relevant evidence admitted at the class certification stage," In re IPO, 471 F.3d at 42 (emphasis added), it appears to us that the standard rules of evidence should apply, see Chen-Oster, 114 F. Supp. 3d at 114 ("Daubert is an amplification of Rule 702, and the Federal Rules of Evidence apply generally to 'proceedings' in the courts of the United States.").

Third, at least two leading treatises endorse this view. "An undiluted Daubert analysis is consonant with a class certification standard that requires a determination by a preponderance of the evidence that each Rule 23 requirement has been met, and under which head-to-head weighing of competing expert evidence is proper." 1 McLaughlin on Class Actions § 3:14 (14th ed.) (Westlaw 2017). "It is not sufficient for the court simply to determine that the testimony could evolve into something admissible by the time of trial." 7AA Charles A. Wright et al., Federal Practice & Procedure § 1785 (4th ed.) (Westlaw 2017).

Though we conclude that Daubert applies, our inquiry is guided by the purpose for which the evidence is introduced -- establishing the various class certification requirements. "[T]he question is not whether a jury at trial should be permitted to rely on the expert's report to find facts as to liability, but rather whether the Court may utilize it in deciding whether the requisites of Rule 23 have been met." Pinnacle Performance, 2013 WL 5658790, at *13 (alterations incorporated) (quoting In re Visa Check/MasterMoney Antitrust Litig., 192 F.R.D. 68, 77 (E.D.N.Y. 2000)); see also Fort Worth Emps.' Ret. Fund v. J.P. Morgan Chase & Co., 301 F.R.D. 116, 126 (S.D.N.Y. 2014) (limiting the Daubert inquiry "to whether or not the expert reports are admissible to establish the requirements of Rule 23" (quoting Pinnacle Performance, 2013 WL 5658790, at *13)).

However, "[a] conclusion that proffered expert evidence is sufficiently reliable and relevant to pass Daubert muster does not end the inquiry on class certification." 1 McLaughlin on Class Actions § 3:14 (14th ed.) (Westlaw 2017); see In re IPO, 471 F.3d at 42 ("[W]e also disavow the suggestion . . . that an expert's testimony may establish a component of a Rule 23 requirement simply by being not fatally flawed."). Rather, expert opinion deemed to be admissible comprises only one part of "the relevant evidence admitted at the class certification stage" to be weighed in determining "whether each Rule 23 requirement has been met," In re

IPO, 471 F.3d at 42, and each requirement must still be established by a preponderance of the evidence, see Bombardier, 546 F.3d at 202.

Therefore, to the extent that flaws in expert testimony proffered at class certification do not warrant that testimony's exclusion by the Court as gatekeeper under Daubert at the threshold, those flaws may nonetheless be considered in the Rule 23 analysis undertaken by the Court as trier of fact. Put differently, though a Daubert motion is an improper venue in which to take sides in a "battle of the experts" offered by competing parties, In re Joint E. & S. Dist. Asbestos Litig., 52 F.3d 1124, 1135 (2d Cir. 1995), disputes between experts must be resolved if necessary to the Rule 23 analysis, see In re IPO, 471 F.3d at 42.

III. EXCHANGE-BASED ACTION

Exchange plaintiffs seek certification of a class comprised of traders of Eurodollar futures (EDF) contracts and options on EDF contracts. Specifically, they seek certification of a class defined as follows:

> All persons, corporations and other legal entities (other than Defendants, their employees, affiliates, parents, subsidiaries, and co-conspirators) ("Eligible Persons") that transacted in Eurodollar futures and options on Eurodollar futures on the Chicago Mercantile Exchange between January 1, 2005 and May 17, 2010 (the

> "Class Period") and that were harmed or satisfy one or more of "A," "B," or "C" below.[8]

The proposed class definition then defines three subcriteria, the second of which consists of three sub-subcriteria and the third of which consists of two sub-subcriteria:

> SUBPART A. Eligible Persons that sold a Eurodollar futures contract, or bought a put option or sold a call option on Eurodollar futures before August 7, 2007 and purchased all or part of this short position back at the final expiration formula price of a Eurodollar futures contract expiring after August 7, 2007 and before May 17, 2010.
>
> SUBPART B. Eligible Persons that (1) purchased Eurodollar futures contract(s) or call options on Eurodollar futures on the following dates: April 7, 2006, August 17, 2006, October 26, 2006, and December 22, 2006; or (2) sold Eurodollar futures contracts or purchased put options on Eurodollar futures on the following dates: September 29, 2005, November 28, 2005, June 30, 2006, September 1, 2006, November 29, 2006, February 28, 2007, March 1, 2007, July 30, 2007, and August 6, 2007; or (3) purchased or sold Eurodollar futures contracts (or options) and that were harmed between January 1, 2005 and August 6, 2007 inclusive.[9]
>
> SUBPART C. Eligible Persons that initiated a Eurodollar futures contract or options position on or after April 15, 2009 and on or before May 17, 2010 ("Period 3"), and who satisfy "1" or "2" below.
>
> > 1. Eligible Persons included in "C" are those that purchased or sold a Eurodollar futures or options

[8] We have previously broken the class period into several "Periods" to facilitate our discussion of statutes of limitations, inquiry notice, and tolling. "Period 0" refers to the period between the start of the class period and August 8, 2007. "Period 1" refers to the period between August 9, 2007 and May 28, 2008. "Period 2" refers to the period between May 29, 2008 and April 14, 2009. "Period 3" refers to the period between April 15, 2009 and the end of the class period. See LIBOR IV, 2015 WL 6243526, at *115-16, slip op. at *277-78. We use "Suppression Period" to refer to Periods 1, 2, and 3.

[9] The dates in subparts A and B of the proposed class definition therefore do not track exactly the Periods we have previously specified. We follow Exchange plaintiffs' proposed definition where applicable.

> contract to initiate a position during Period 3 and that were harmed.
>
> 2. Eligible Persons included in "C" are also those that purchased a Eurodollar futures contract (including Eurodollar futures contracts the expiration for which was less than 365 calendar days after the date of such purchase) to initiate a long position during Period 3, and continued to hold all or part of such long position until liquidating the position after Period 3.

The operative Corrected Fourth Amended Consolidated Class Action Complaint, identified panel banks Bank of America, Barclays, Citi, Deutsche Bank, JPMorgan Chase, Rabobank, and UBS (and certain affiliates of these panel banks) as defendants. (Corrected Fourth Am. Consolidated Class Action Compl. ("Corrected 4AC") ¶¶ 34-38, 45, 57-59, 66-68, 77-78, Dec. 11, 2017, ECF No. 2363.) Exchange plaintiffs assert five claims, four under the Commodities Exchange Act (CEA) and the fifth under the Sherman Act. The CEA claims are asserted against all defendants, whereas the antitrust claims are asserted against only Bank of America, Citi, and JPMorgan Chase consistent with our rulings in LIBOR VI, see 2016 WL 7378980, at *25, slip op. at app. A-1. (Corrected 4AC ¶¶ 668-705.)

The scope of claims remaining in this action has also been narrowed by several settlements between Exchange plaintiffs and particular defendants. We preliminarily approved a settlement with Barclays, see Dec. 2, 2014 Order, 2014 WL 6851096, ECF No. 861, and we deferred preliminary approval of the settlements with

Citi and Deutsche Bank (Letter from Christopher Lovell & David Kovel to the Court, Oct. 11, 2017, ECF No. 2307) pending our resolution of the class-certification motions. Bank of America and JPMorgan Chase have also reached settlements with Exchange plaintiffs, though no documentation memorializing the settlement has yet been filed.[10] (Jan. 18, 2018 Hr'g Tr. ("Hr'g Tr.") 24:10-25:21.) As a result of these settlements, only CEA claims remain in this action: those based on trader-based manipulation under direct and vicarious liability theories against Rabobank, and those based on persistent suppression under direct, vicarious liability, and aiding and abetting theories against UBS. (Corrected 4AC ¶¶ 668-705.)

As part of briefing the motion for class certification, the parties have submitted reports and deposition testimony from eight experts. Seven of these experts' opinions have prompted Daubert motions. Rabobank has moved to exclude the opinions of (1) Dr. H. Nejat Seyhun, (2) Dr. Janet Netz, (3) Mr. Craig Beevers, and (4) Mr. Eric Miller. Exchange plaintiffs have moved to exclude the opinions of (5) Dr. Robert Willig, (6) Dr. Christopher Culp, and

[10] Though no longer a defendant following our personal-jurisdiction rulings in LIBOR IV and LIBOR VI, HSBC has also settled with the Exchange plaintiffs (Letter from Christopher Lovell & David Kovel to the Court, Oct. 11, 2017, ECF No. 2307), and we similarly deferred preliminary approval of that settlement.

(7) Dr. R. Glenn Hubbard. We first consider the Daubert motions before proceeding to the motion for class certification itself.[11]

1. Rabobank's Daubert Motions

1.1. Dr. Seyhun

Exchange plaintiffs offer two reports from Dr. H. Nejat Seyhun: (1) an initial report dated February 2, 2017 (Decl. of David Kovel ex. G., July 10, 2017, ECF No. 2071); and (2) a rebuttal report dated May 3, 2017 (Decl. of Jefferson Bell ex. 5, June 30, 2017, ECF No. 2008). We refer to these as the Seyhun Initial Report and the Seyhun Rebuttal Report. Across these two reports, Dr. Seyhun's opinions relate primarily to two subjects: (1) the determination of what LIBOR, and each bank's LIBOR submissions, would have been but-for the alleged manipulative conduct, and (2) the determination of what effect changes in LIBOR have on the trading prices of EDF contracts and options. Rabobank does not challenge Dr. Seyhun's qualifications, and we agree that Dr. Seyhun is well qualified to offer these opinions.[12]

1.1.1. Models of But-For Published LIBOR and But-For LIBOR Submissions

[11] UBS also submitted two expert reports from Dr. Janusz Ordover: (1) an initial report dated April 21, 2017 (Decl. of Jefferson Bell ex. 1, June 30, 2017, ECF No. 2008); and (2) a sur-rebuttal report dated June 30, 2017 (Decl. of Jefferson Bell ex. 2, June 30, 2017, ECF No. 2008). Exchange plaintiffs did not seek to exclude any portion of Dr. Ordover's reports. UBS also did not file any Daubert motions.

[12] Dr. Seyhun is the Jerome B. and Eilene M. York Professor of Business Administration and a Professor of Finance at the University of Michigan's Ross School of Business. He holds a Ph.D. and M.S. from the University of Rochester and a B.S. from Northwestern University, and has written a number of published papers on various finance and securities topics. (Seyhun Initial Report app. B.)

Dr. Seyhun first opines that certain statistical and mathematical analyses can demonstrate that the defendants' alleged conduct impacted LIBOR and calculate the amount of impact. (Seyhun Initial Report ¶ 12.) To support this conclusion, Dr. Seyhun offers several models for estimating but-for LIBOR and each bank's but-for LIBOR submissions as evidence that these statistical and mathematical analyses are available. (E.g., Seyhun Initial Report ¶ 87.) In his initial report, Dr. Seyhun offers two methodologies that involve first the calculation of but-for published LIBOR and then the derivation of each bank's but-for LIBOR submission from but-for published LIBOR. In his rebuttal report, Dr. Seyhun offers two additional models that are entirely distinct from the two models presented in his initial report. In each of these models, Dr. Seyhun first calculates but-for LIBOR submissions for each panel bank and then applies the BBA's trimming methodology -- which excludes the top quartile of submissions and the bottom quartile of submissions and averages the remaining submissions -- in order to determine but-for published LIBOR.

The two models presented in Dr. Seyhun's initial report each begin with the calculation of but-for published LIBOR. Dr. Seyhun models the mathematical relationship between LIBOR and a reference rate on a daily basis during a "clean period" using an ordinary

least squares (OLS) regression,[13] and uses that relationship to predict LIBOR over the Class Period. Though Dr. Seyhun varies the reference rate and clean period at various points in his report,[14] Dr. Seyhun primarily uses the ICAP-Ask rate[15] as the reference rate and the aggregated period from 2000 through 2004 combined with 2013 as the clean period. (Seyhun Initial Report ¶¶ 70-78, tbl.2.2.) Dr. Seyhun defines LIBOR "artificiality" to be the difference between his calculated but-for published LIBOR and actual published LIBOR and tests the statistical significance of the artificiality during the Suppression Period (but not Period 0) using another regression. (Seyhun Initial Report tbl.2.3.)

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[13] "Specifically, the ordinary least-squares (OLS) method of linear regression solves for a [line of best fit] that minimizes the sum of the squared residuals." Reed Constr. Data Inc. v. McGraw-Hill Cos., 49 F. Supp. 3d 385, 397 n.5 (S.D.N.Y. 2014). Each "residual" is the difference between the actual observed value of the dependent variable and the value of the dependent variable estimated using the line of best fit.

[14] Dr. Seyhun also uses Federal Reserve Eurodollar Rate (FRED) as the reference rate in part of his analysis. (Seyhun Initial Report ¶¶ 59-69, tbl.2.1.) However, his subsequent calculations do not rely on but-for LIBOR calculated using the FRED rate.

[15] The ICAP-Ask rate is a data series, published alongside the ICAP-Bid rate, by ICAP Capital Markets LLC. In response to subpoenas issued in this case, ICAP explained that this rate is "meant to provide general 'market color' regarding the range of offer rates by top tier banks on unsecured liabilities in the overnight wholesale money market" and was "formed from pricing indications and other market information, including but not limited to the range of offers that ICAP's brokers observe in the market." (Decl. of Jamie Heine ex. 41, July 1, 2017, ECF No. 2031.) The parties dispute whether the ICAP-Ask rate in fact represents ask (or offer) rates, and ICAP explained that it "interpreted the range that it quoted as a high and a low for the expected range for trades done by upper tier banks," which "Bloomberg's methodology converted . . . to a bid and an offer." (Decl. of Jamie Heine ex. 41, July 1, 2017, ECF No. 2031.) In referring to this rate as the "ICAP-Ask rate," we do not suggest that the data series in fact corresponds to ask (or offer) rates rather than bid rates or some other indicator.

Dr. Seyhun also estimates but-for LIBOR using the ICAP-Ask rate as the reference rate in a second regression. Otherwise identical, this second ICAP-Ask model uses a clean period of 2000 through 2002 aggregated with 2013. Dr. Seyhun presents an analysis of the statistical significance of his artificiality estimates based on this specification (Seyhun Initial Report tbl.2.4), but does not present the results of the regression itself and does not reference this 2000-2002 plus 2013 regression elsewhere in his initial report.

Dr. Seyhun then derives, for each panel bank, but-for LIBOR submissions from the first ICAP-Ask-based model of but-for LIBOR using two different methods.[16] Under the first method (the "Relative Artificiality" model), Dr. Seyhun assesses the "relative artificiality" of a bank's submission by calculating the difference between a bank's actual submission and actual published LIBOR. If the bank's submission was not trimmed from the calculation of published LIBOR, the relative artificiality equals the difference between published LIBOR and the bank's LIBOR submission. If the bank's submission <u>was</u> trimmed from the calculation of published LIBOR by virtue of being higher than the third quartile submission (or lower than the first quartile submission), Dr. Seyhun limits the bank's relative artificiality

[16] Dr. Seyhun suggests that these methods apply only during the Suppression Period and not Period 0, but presents data for both periods. (Seyhun Initial Report ¶¶ 91-102, figs.1E1-1F17.)

to the relative artificiality of the highest (or lowest) submission that was retained in the actual LIBOR calculation. This "relative artificiality" in the bank's submission is then added to overall LIBOR artificiality to estimate the total extent of artificiality in the bank's submission. (Seyhun Initial Report ¶¶ 92-94, figs.1E1-1E17.)

Under the second method (the "CDS Spread" model), Dr. Seyhun first estimates, for each panel bank, the relationship between the bank's LIBOR submission and the spreads on the bank's credit default swaps (CDS).[17] Dr. Seyhun uses a regression specified as the natural logarithm of the LIBOR submission against the natural logarithm of the CDS spread and a set of "dummy" indicator variables corresponding to each day, over a clean period from May 18, 2010 to December 31, 2015.[18] Then, for each bank, Dr. Seyhun calculates the percentage deviation of the bank's CDS spread from the average CDS spread across all panel banks and uses that deviation to calculate the percentage difference between the

[17] "[A] credit default swap allows an investor to buy . . . in essence an insurance policy, to protect him against the probability of default by requiring the seller of protection to pay the investor the par value if there is a default before the bond matures. A credit default swap spread [is] the price the seller of protection charges, capturing 'the spread between a risk-free bond and . . . a risky bond.'" In re Enron Corp. Sec. Derivative & "ERISA" Litig., 529 F. Supp. 2d 644, 764 (S.D. Tex. 2006).

[18] A logarithm (or log) is the mathematical inverse of exponentiation: if x taken to the yth power equals z, the log base x of z equals y. To take a specific example: 10 to the third power equals 1000, and the log base 10 of 1000 equals 3. The natural logarithm is one specific logarithm in which the base is the mathematical constant e, which is equal to approximately 2.7183. Because Dr. Seyhun has specified this regression using the natural log of LIBOR submissions and the natural log of CDS spreads, the results may be interpreted in percentage terms.

bank's but-for LIBOR submission from published LIBOR, and applies that difference to but-for LIBOR to calculate the bank's but-for LIBOR submission. (Seyhun Initial Report ¶¶ 95-102.)

In his third model (his rebuttal report's first model), which we refer to as the "Rebuttal Period 0 Model," Dr. Seyhun reviews documents to identify "events" of trader-based manipulation and determines whether the event has "a clear directionality," finding 63 "events" over 45 different days. (Seyhun Rebuttal Report ¶ 488.) Independently, to estimate each bank's but-for LIBOR submission, Dr. Seyhun regresses each bank's LIBOR submission on a given day against the ICAP-Ask rate, a one-day lag of the ICAP-Ask rate,[19] a set of dummy variables for each month over Period 0, a first set of interaction terms between the monthly dummy variables and the ICAP-Ask rate, and a second set of interaction terms between the monthly dummy variables and the lagged ICAP-Ask rate. (Seyhun Rebuttal Report ¶¶ 489-91.) That is, Dr. Seyhun estimates, for each panel bank on a given day, the bank's but-for LIBOR submission based on, among other variables, that day's ICAP-Ask rate and the prior day's ICAP-Ask rate. From these but-for LIBOR submissions, Dr. Seyhun then calculates but-for LIBOR by applying the BBA's trimming methodology. Comparing the results

[19] Generally, the *n*th "lagged" value of explanatory variable refers to that variable's value *n* time periods prior. In Dr. Seyhun's models, which are daily, the third lag of an explanatory variable, for example, would refer to that variable's value three days earlier.

from this model and his documentary analysis, Dr. Seyhun concludes that there is "confirmed manipulation by at least one bank on 45 different occasions." (Seyhun Rebuttal Report ¶ 494.)

In his fourth model (his rebuttal report's second model), which we refer to as the "Rebuttal Suppression model," Dr. Seyhun conducts another regression in order to estimate each panel bank's but-for LIBOR submissions. He regresses, using an aggregated clean period of January 1, 2004 through August 7, 2007 and May 18, 2010 through December 31, 2012,[20] each bank's actual LIBOR submission against (1) the ICAP-Ask rate, (2) a one-day lag of the ICAP-Ask rate, (3) the one-month overnight indexed swap (OIS) rate, (4) the standard deviation of the panel banks' CDS spreads, and (5) the difference between the bank's CDS spread and the panel banks' mean CDS spread. Dr. Seyhun then calculates "artificiality" during the Suppression Period as the difference between a bank's actual submission and the bank's but-for submission estimated using his five-variable regression. As in his initial report, Dr. Seyhun also tests the statistical significance of his measured artificiality.

[20] The text of Dr. Seyhun's report indicates that his clean period is "January 1, 2004 to August 7, 2007 and May 18, 2010-Dec. 31, 2013." (Seyhun Rebuttal Report ¶ 497.) However, in a footnote, he states that "[t]he end of my estimation period is December 31, 2012," acknowledging Dr. Hubbard's observation that ICAP-Ask remains constant for an eight-month period in 2013. (Seyhun Rebuttal Report ¶ 497 n.301.) We accordingly assume that the clean period for this regression ended in 2012 as Dr. Seyhun states in a footnote rather than in 2013 as Dr. Seyhun states in the text of his report.

Rabobank contends that Dr. Seyhun's models, and his opinions based on these models, are unreliable because (1) the four models yield directionally inconsistent results; (2) the four models produce implausible findings of artificiality, including substantial artificiality during purported "clean" periods; (3) the ICAP-Ask models and Rebuttal Period 0 models produce estimates of artificiality inconsistent with Dr. Netz's opinions and Exchange plaintiffs' allegations; and (4) his Relative Artificiality and CDS Spread models of but-for LIBOR submissions are reliant on unreliable estimates of but-for LIBOR improperly estimated using 2013 as part of the clean period. We consider each argument in turn.

1.1.1.1. Internal Inconsistencies

Rabobank, relying on Dr. Hubbard's opinions, contends that Dr. Seyhun's methodologies are internally inconsistent. According to Rabobank and Dr. Hubbard, across Dr. Seyhun's four models of but-for LIBOR (the two ICAP-Ask based models presented in the initial report, the Rebuttal Period 0 model, and the Rebuttal Suppression model), at least one model finds upward manipulation on 65% of days in Period 0 and at least one model finds downward manipulation of LIBOR on 89% of days in Period 0. Similarly, across Dr. Seyhun's four models of but-for LIBOR submissions (the Relative Artificiality and CDS Spread models based on the first ICAP-Ask-based model of but-for LIBOR, the Rebuttal Period 0 model,

and the Rebuttal Suppression model), at least one model finds upward manipulation of Rabobank's LIBOR submission on 95% of days in Period 0 and at least one model finds downward manipulation on 84% of days in Period 0.

Because the sum of each set of figures is greater than 100%, Rabobank asserts that this "mathematical impossibility" establishes the unreliability of Dr. Seyhun's models. (Rabobank Seyhun Mem. 8; Hubbard Rebuttal Report ¶ 17 & n.54.) Exchange plaintiffs do not dispute Rabobank's cited statistics, but contend that those statistics are meaningless because Dr. Seyhun's models are presented as alternatives and their results therefore "are not meant to be combined." (Exch. Pls.' Seyhun Opp'n 11.)

Rabobank's "mathematical impossibility" argument is not necessarily persuasive, as the 100% threshold on which the argument relies is of little significance here. An expert's models are not necessarily questionable if that percentage exceeds 100%; the extent to which the models disagree matters more than the mathematical sum of certain results that they produce. For example, if an expert presented two models, one of which found upward manipulation on days amounting to 51 days of a 100-day class period and the other of which found downward manipulation on the remaining 49 days but also one day in which the first model found upward manipulation, that one day of conflicting results does not necessarily call into question the entirety of the models.

Conversely, an expert's models may be questionable even if the relevant percentages did not exceed 100%.[21] Further, Dr. Seyhun's models are structured differently -- at least in part -- in order to reflect differences between Period 0 and the Suppression Period. (Seyhun Initial Report ¶¶ 81-102; Seyhun Rebuttal Report ¶¶ 487-500.)

Nonetheless, in this case, the inconsistencies in the results produced by Dr. Seyhun's models do call into question the models' reliability. Even when intended to measure artificiality during the same period of time, Dr. Seyhun's models produce directionally inconsistent results a substantial portion of the time. Even though all three models are intended to estimate artificiality in Rabobank's LIBOR submissions during Period 0, the Rebuttal Period 0 model produces results directionally inconsistent[22] from those produced by and the CDS Spread and Relative Artificiality models on 49% and 40% of days in Period 0, respectively. (Hubbard Rebuttal Report ¶ 20, tbl.1.) Similarly, the Rebuttal Period 0 model produces directionally inconsistent estimates of artificiality in LIBOR from the two ICAP-Ask-based models of but-

[21] For example, if an expert presented two models, one of which found upward manipulation on days amounting to 49% of the class period and the other of which found downward manipulation on exactly the same days, we would have serious doubts as to the reliability of those models even though the sum of the percentages -- 49% plus 49% -- is less than 100%.

[22] That is, where one model finds positive artificiality and another model finds negative artificiality.

for LIBOR on 44% and 42% of the days in Period 0. (Hubbard Rebuttal Report ¶ 24, tbl.2.)

Accordingly, Exchange plaintiffs cannot seriously dispute that Dr. Seyhun's models produce meaningfully different estimates of artificiality, in directionally inconsistent ways. (Hubbard Rebuttal Report exs. 21A-21Q, 22.) Rabobank has not "manipulated" Dr. Seyhun's models as Exchange plaintiffs suggest by comparing the results produced by one model to those produced by other models; rather, Rabobank identified pervasive inconsistencies. Even if the models are formally designated "alternatives," each is nonetheless intended to estimate the same measures: the amount of artificiality in LIBOR and each panel bank's LIBOR submissions. Some minor disagreement between the models would naturally be expected, but Dr. Seyhun's models produce internally inconsistent results on more than half of days. Inconsistencies of this magnitude indicate a lack of reliability. See Lippe, 99 F. App'x at 279 ("[The expert] failed to explain why her [two] analyses did not yield similar results -- after admitting that they should."); In re Fed. Home Loan Mortg. Corp. (Freddie Mac) Sec. Litig., 281 F.R.D. 174, 181 (S.D.N.Y. 2012) ("[The expert's] analysis changed so many times in important ways and was so internally inconsistent that I found it unreliable and unpersuasive."). Dr. Seyhun has not made a similar concession, but his models are, at bottom,

intended to measure the same things -- artificiality in LIBOR and LIBOR submissions.

Exchange plaintiffs argue that we should reject Lippe and In re Freddie Mac, contending that we should instead follow U.S. Information Systems, Inc. v. IBEW Local Union No. 3, 313 F. Supp. 2d 213, 236 (S.D.N.Y. 2004), which held that "purported inconsistencies in [an expert's] methodology go to the weight, not the admissibility of his testimony." (Exch. Pls.' Seyhun Opp'n 10 n.9.). However, these cases establish a distinction between inconsistencies within an expert's application of a single methodology on the one hand and inconsistencies across an expert's multiple methodologies on the other. U.S. Information Systems establishes at most that the former was not a basis for exclusion in that case, see 313 F. Supp. 2d at 235-36 (addressing an expert's "inconsistent application of methodology").[23] By contrast, Lippe, Freddie Mac, and Dr. Seyhun's multitude of models all present the latter issue. See Lippe, 99 F. App'x at 279 (identifying an expert's failure "to explain why her [two alternative] analyses did not yield similar results"); Freddie Mac, 281 F.R.D. at 179-81 (finding an expert's two event studies "internally inconsistent"). In sum, we conclude that the internally

[23] We also question whether a single methodology, if applied inconsistently by an expert, could be properly termed a "methodology" at all, let alone a reliable one.

inconsistent nature of Dr. Seyhun's models seriously undermine their reliability.

1.1.1.2. Implausible Artificiality Findings

Next, Rabobank argues that Dr. Seyhun's ICAP-Ask-based models of but-for LIBOR and his Rebuttal Period 0 model are unreliable because the three models identify artificiality in published LIBOR on a substantial percentage of days during the models' respective clean periods. Specifically, the first ICAP-Ask-based model identifies artificiality on 57% of days between 2000 and 2004, the second ICAP-Ask-based model identifies artificiality on 39% of days between 2000 and 2002, and the Rebuttal Period 0 model identifies artificiality on every single day in Period 0. (Rabobank Seyhun Mem. 9.)

Rabobank's statistics are not entirely fairly presented, as they represent percentages of only certain portions of the clean periods underlying the three models rather than the entireties of the clean periods. Nonetheless, restating those percentages slightly to represent percentages of the entire clean periods, Dr. Seyhun's models continue to find significant artificiality during clean periods. The first ICAP-Ask-based model identifies artificiality on 50% of clean-period days,[24] the second ICAP-Ask-

[24] Rabobank's 57% figure is calculated as 700 days with identified artificiality in 2000 through 2004, divided by 1225 trading days in that period. In the 251 trading days in 2013, the first ICAP-Ask based model identifies 31 days with artificiality; 50% is calculated as the sum of 700 and 31 divided by the sum of 1225 and 251. (Hubbard Initial Report ex. 9.1.)

based model identifies artificiality on 29% of clean-period days,[25] and the Rebuttal Period 0 identifies artificiality on at least 58% of clean-period days.[26]

As to the ICAP-Ask-based models of but-for LIBOR, Exchange plaintiffs again do not dispute Rabobank's statistics, but contend that the clean periods in those models "were not 100% clean periods," "merely cleaner periods." (Exch. Pls.' Seyhun Opp'n 12 n.11.) Accordingly, they reassure us, the ICAP-Ask-based models retain validity because they find comparatively more artificiality during the Class Period than during the clean periods.

We seriously question whether a period with artificiality on half of days, or even 29% of days, may be fairly characterized as a "clean" period. As an initial matter, this defense is plainly inconsistent with Exchange plaintiffs' theory of the case, which does not extensively allege manipulation between 2000 and 2004. But even had Exchange plaintiffs done so, the reliability of Dr. Seyhun's regressions -- ultimately intended to gauge the relationship between LIBOR and ICAP-Ask absent the defendants' challenged conduct -- would be seriously undermined by their

[25] Rabobank's 39% figure is calculated as 284 days with identified artificiality in 2000 through 2002, divided by 732 trading days in that period. Because the second ICAP-Ask-based model does not identify any artificiality in 2013, 29% is calculated as 284 divided by the sum of 732 and 251, the total number of trading days in the entire clean period. (Hubbard Initial Report ex. 9.2.)

[26] Even assuming the Rebuttal Period 0 model identifies no artificiality whatsoever in the second part of its clean period, Period 0 accounts for 58% of trading days in the Rebuttal Period 0 model's aggregate clean period.

incorporation of data pervasively affected by that very conduct. Cf. Fogarazzo v. Lehman Bros., Inc., 263 F.R.D. 90, 105 & n.124 (S.D.N.Y. 2009) (expressing skepticism regarding an expert's use of control periods that had been affected by the defendants' challenged conduct). Moreover, this belated rationalization is belied by Dr. Seyhun's opinions. In offering his ICAP-Ask-based models of but-for LIBOR in his initial report, Dr. Seyhun specifically opined that "[b]y definition, the estimation period should be free from manipulation" and suggested that a clean period incorporating the period between May 18, 2010 and December 31, 2012 was inappropriate because "there is some evidence that suggests that some manipulation may have continued into 2012 after the Class Period." (Seyhun Initial Report ¶ 72, n.32 (emphasis added).)[27]

Our confidence in the first ICAP-Ask-based model is further undermined by the fact that in addition to finding substantial artificiality between 2000 and 2004, it apparently finds no significant artificiality during Period 0. (Hubbard Initial Report ¶ 125, ex. 10.2.). That is, this model identifies significant LIBOR artificiality when Exchange plaintiffs have not alleged manipulation, and no significant LIBOR artificiality when

[27] Similarly, in describing Dr. Seyhun's analyses, Dr. Netz explains that "Dr. Seyhun proposed to model the relationship between LIBOR and a benchmark interest rate during a time period that was not subject to manipulation." (Netz Rebuttal Report 5 (emphasis added).)

they have so alleged. While sporadic findings of artificiality in clean periods may be attributable to statistical noise, this exactly-backwards relationship suggests either an unreliable model or a deeper flaw in Exchange plaintiffs' theory of the case. Because the Relative Artificiality and CDS Spread models of but-for LIBOR submissions are reliant on the first ICAP-Ask-based model's estimates of but-for LIBOR, the reliability of those models is necessarily called into question as well.

As to the Rebuttal Period 0 model, Exchange plaintiffs respond first that Dr. Seyhun's Rebuttal Period 0 model "predicts artificiality [only] on days where there exists documented evidence that is consistent in direction with the model's prediction" (Exch. Pls.' Seyhun Opp'n 11), and second that the Rebuttal Period 0 Model "breaks up Period 0 into separate control and treatment periods" based on "documented evidence of TBM," (Exch. Pls.' Seyhun Opp'n 16).

Exchange plaintiffs' first response is little more than definitional sleight-of-hand. Rabobank's contention is that the Rebuttal Period 0 model finds <u>mathematical</u> artificiality on 100% of days in Period 0 -- that is, the Rebuttal Period 0 model calculates a but-for LIBOR that is different from actual published LIBOR. By contrast, Exchange plaintiffs' response defines "artificiality" to mean mathematical artificiality supported by

"corroborating evidence" based on Dr. Seyhun's assessment of documents.

This terminological slipperiness is unavailing. In contending that Dr. Seyhun's models are in fact capable of identifying trader-based manipulation, Exchange plaintiffs argue that "on days that documents do not show evidence of manipulation, the TBM Model finds positive <u>artificiality</u> only 51% of the time" and "negative <u>artificiality</u> only 49% of the time." (Exch. Pls.' Seyhun Opp'n 17 n.18 (emphasis added) (citing Seyhun Rebuttal Report ¶ 493).) But this statement is wholly irreconcilable with their contention now that the Rebuttal Period 0 "predicts artificiality [only] on days where there exists documented evidence that is consistent in direction with the model's prediction." (Exch. Pls.' Seyhun Opp'n 11.) Accepting this latter statement as true, then on days where no documents show evidence of manipulation, the TBM Model should find positive artificiality 0% of the time and negative artificiality 0% of the time. But it does not.

Ultimately, Dr. Seyhun's Rebuttal Period 0 Model finds mathematical artificiality on 100% of days in Period 0, and we conclude that this implausible finding of (mathematical) artificiality undermines the reliability of the Rebuttal Period 0 Model. Exchange plaintiffs' attempt to obfuscate this reality by shifting the definition of "artificiality" to include a

requirement of documentary corroboration does not affect our conclusion regarding the unreliability of Dr. Seyhun's methodology. Indeed, accepting this revised definition of "artificiality," Dr. Seyhun's models would be wholly incapable of identifying instances of TBM-caused artificiality. The documentary corroboration requirement becomes the only filter separating true "artificiality" from the mathematical artificiality identified by the Rebuttal Period 0 Model on 100% of days in Period 0, even though the days may otherwise be difficult to distinguish.[28] Exchange plaintiffs' dual contentions -- that the Rebuttal Period 0 model is capable of identifying trader-based manipulation independent of documentary evidence on the one hand (based on its findings of mathematical artificiality) but that the Rebuttal Period 0 model does not identify artificiality on 100% of days in Period 0 (because it requires documentary evidence) -- cannot be reconciled.

Nor do we find much comfort in Exchange plaintiffs' assurances that Dr. Seyhun's Rebuttal Period 0 model finds positive (mathematical) artificiality on 71% of days with documentary evidence of upward manipulation and finds negative (mathematical) artificiality on 75% of days with documentary evidence of downward

[28] This reliance would be especially troubling in light of Exchange plaintiffs' contentions, and Mr. Beevers's opinions, that many instances of trader-based manipulation would have occurred verbally and are not documented. (Beevers Initial Report ¶¶ 118-24.)

manipulation. (Exch. Pls.' Seyhun Opp'n 17 n.18.) Rephrasing slightly, this contention acknowledges that even on days for which Dr. Seyhun has already identified documentary evidence of manipulation, the Rebuttal Period 0 model has an error rate between 25% and 29%.

Exchange plaintiffs' second response, that the Rebuttal Period 0 model in fact divides Period 0 into a control period and a treatment period, is difficult to evaluate based on Dr. Seyhun's report, and Rabobank disputes whether Dr. Seyhun based his regressions only on days without evidence of trader-based manipulation. If Dr. Seyhun did in fact separate days in Period 0 with documentary evidence of trader-based manipulation from days without such evidence and used only the latter as a control period as plaintiffs assert, his report is conspicuously devoid of any indication to that effect. (Seyhun Rebuttal Report ¶¶ 487-94.) Nonetheless, we accept counsel's representation at oral argument that Dr. Seyhun did so separate (Hr'g Tr. 5:2-6:8), and conclude that this second defense is also unpersuasive. Regressions relying on piecemeal clean periods have been described as "unorthodox," and at least one court has noted that the selection of a clean period wholly independent of periods involving challenged conduct is recommended practice. See Fogarazzo, 263 F.R.D. at 105. Indeed, this choice of clean period becomes especially difficult to justify given that Exchange plaintiffs assert that there likely

exist additional instances of trader-based manipulation in Period 0 that could be identified through additional discovery, which would taint days in the clean period -- a point acknowledged by counsel at oral argument. (Hr'g Tr. 6:3-9; Exch. Pls.' Seyhun Opp'n 13.)

1.1.1.3. Inconsistencies with Dr. Netz

Rabobank casts further doubt on the reliability of Dr. Seyhun's methodologies by identifying substantial inconsistency between Dr. Seyhun's findings and Dr. Netz's findings on the existence and direction of manipulation. Rabobank notes that, when compared to Dr. Netz's findings of manipulation of Rabobank's LIBOR submissions in a particular direction, Dr. Seyhun identifies LIBOR artificiality in the opposite direction 52% of the time using his first ICAP-Ask-based model of but-for LIBOR and 56% of the time using his Rebuttal Period 0 Model. (Hubbard Initial Report ¶¶ 84-86, ex. 1.1; Hubbard Rebuttal Report ¶¶ 46-47.)

Exchange plaintiffs again do not deny the existence of these inconsistencies, but relying on In re Vitamin C Antitrust Litigation, No. 06 MD 1738 (BMC)(JO), 2012 WL 6675117, at *4 (E.D.N.Y. Dec. 21, 2012), suggest that any disagreement between Dr. Seyhun and Dr. Netz is merely a "battle of the experts" that need not be resolved now. However, we are unpersuaded that fundamental disagreements between a party's own experts can be considered a mere "battle of the experts." See, e.g., Deutsch v.

Novartis Pharm. Corp., 768 F. Supp. 2d 420, 469 (E.D.N.Y. 2011) (identifying inconsistencies between two of the same party's experts as a basis for exclusion).

Further, Dr. Netz's opinions regarding specific instances of trader-based manipulation largely overlap with the allegations of trader-based manipulation set forth in the Exchange plaintiffs' operative complaint. (Compare Netz Initial Report ex. 1, with, e.g., Corrected 4AC ¶¶ 157-79 (Barclays allegations); id. ¶¶ 194-97 (Rabobank allegations); id. ¶ 227 (Deutsche Bank allegations).) Consequently, to the extent Dr. Seyhun's opinions contradict Dr. Netz's opinions regarding specific instances of trader-based manipulation and the direction of that manipulation, they contradict Exchange plaintiffs' allegations as well. Such a misfit also indicates a lack of reliability.

Exchange plaintiffs further assure us that any inconsistencies between Dr. Seyhun's opinions and Dr. Netz's opinions (and, by extension, the allegations in the complaint) are of no concern because "where documentary evidence is limited, an initial review of that evidence may yield a result that is directionally inconsistent with the results of a statistical analysis." (Exch. Pls.' Seyhun Opp'n 12-13.) For instance, they suggest, if on a given day, one bank manipulated its submission downward and two banks manipulated their submissions upward, but only documentary evidence of the first bank's manipulation were

available, Dr. Seyhun's models could correctly show upward manipulation in LIBOR even though such a result would be seemingly inconsistent with the available documentary evidence (of only the first bank's downward manipulation). (Exch. Pls.' Seyhun Opp'n 13 n.13.)

The possibility of undiscovered instances of manipulation explains away little of the inconsistency between Dr. Seyhun and Dr. Netz, as further documentary evidence of manipulation by additional banks cannot explain away directional inconsistency between documentary evidence of trader-based manipulation by one bank as identified by Dr. Netz (and as alleged by Exchange plaintiffs) and artificiality in that bank's LIBOR submissions as calculated by Dr. Seyhun's models. Accordingly, to the extent artificiality in LIBOR as calculated by Dr. Seyhun's models shares the same direction as artificiality in LIBOR submissions, inconsistency between Dr. Netz's findings (and Exchange plaintiffs' allegations) and the former implies inconsistency between Dr. Netz's findings and the latter as well.

Under Dr. Seyhun's Relative Artificiality model, the direction of artificiality in each bank's LIBOR submissions will generally be the same as the direction of artificiality in overall published LIBOR. Indeed, when a bank's LIBOR submission is within the interquartile range and is therefore retained in calculating LIBOR, Dr. Seyhun's Relative Artificiality model will find

artificiality in the bank's LIBOR submission identical in both direction and magnitude to artificiality in LIBOR. Similarly, under the CDS Spread Model of Rabobank's but-for LIBOR submissions, Dr. Seyhun generally finds that Rabobank manipulated its submissions upward throughout Period 0. Figure 1F13 in the Seyhun Initial Report, displaying the CDS Spread Model's results for Rabobank, generally shows Rabobank's actual LIBOR submissions to be above Rabobank's but-for LIBOR submissions during Period 0. By contrast, of the 32 instances of TBM identified by Dr. Netz associated with Rabobank, she finds that only 17 (or 53%) involved upward manipulation.[29] (Netz Initial Report ex. 1; Netz Rebuttal Report ex. 26.) That is, Dr. Netz reaches an inconsistent conclusion on 47% of days. Further, Dr. Seyhun acknowledges inconsistency between the direction of artificiality in a bank's LIBOR submissions suggested by documentary evidence -- also the basis for Dr. Netz's opinions -- and the direction of artificiality calculated by the Rebuttal Period 0 Model: two of the exhibits in the Seyhun Rebuttal Report identify only "Documented Trader Manipulation Events Consistent with [the Rebuttal] Period 0 Model," suggesting the exclusion of inconsistent events. (Seyhun Rebuttal Report ¶ 493, exs. 1-2.)

[29] Of the remaining 15 instances, Dr. Netz finds that 10 involved downward manipulation and five instances in which the LIBOR submission was unchanged.

In sum, none of these inconsistencies between Dr. Seyhun's various models of but-for LIBOR submissions and Dr. Netz's document-based identification of manipulation can be explained away by the specter of additional documentary evidence of manipulation by additional panel banks. Accordingly, these inconsistencies further erode our confidence in the reliability of Dr. Seyhun's models.

1.1.1.4. Inclusion of 2013 in Clean Periods

Rabobank argues that Dr. Seyhun's inclusion of 2013 in his clean periods is improper cherry-picking, as the ICAP-Ask-based models of but-for LIBOR show no statistically significant artificiality during Period 0 when 2013 is removed from the clean period. The inclusion of 2013 is problematic, Rabobank argues, because the relationship between published LIBOR and ICAP-Ask differs between the two discontinuous pieces of Dr. Seyhun's clean periods -- the spread averages 2.7 basis points between 2000 and 2004, but averages negative 1.4 basis points in 2013 (Rabobank Seyhun Mem. 13; Hubbard Initial Report ¶ 115, ex. 7.1) -- and because the ICAP-Ask rate in 2013 exhibits data-quality problems in that it remains entirely unchanged for more than eight consecutive months. (Rabobank Seyhun Reply 3 n.8; Hubbard Initial Report ¶ 116, ex. 8.1.)

Exchange plaintiffs admit that the spread between LIBOR and the ICAP-Ask rate in 2000-2004 (and 2000-2002) differs from the

spread in 2013, do not dispute the ICAP-Ask data-quality issue, and do not appear to dispute Dr. Hubbard's findings that the Initial ICAP-Ask models identify no statistically significant artificiality when 2013 is removed from the respective clean periods. (Exch. Pls.' Seyhun Opp'n 14-15). Rather, they argue that the difference in spread is "inconsequential" because the spread is "absorbed" into the intercept term of Dr. Seyhun's regressions. (Exch. Pls.' Seyhun Opp'n 15; Seyhun Rebuttal Report ¶ 463.)

This contention is unavailing. In assessing the relationship of LIBOR and the 3-month ICAP-Ask rate, Dr. Seyhun conducts an Ordinary Least Squares (OLS) regression[30] specified as follows:

$$\text{LIBOR} = \alpha + \beta \cdot (\text{ICAP-Ask}) + \varepsilon$$

(Seyhun Report tbl.2.2.) In an OLS regression of this form, α represents the intercept, β represents the coefficient capturing the relationship between ICAP-Ask and LIBOR, and ε represents the error term. In turn, β is calculated as (1) the covariance of dependent variable (LIBOR) and the single explanatory variable (ICAP-Ask), divided by (2) the variance of the explanatory variable (ICAP-Ask). The intercept term, α, is then calculated as the mean of the dependent variable (LIBOR) minus the product of the coefficient β and the mean of explanatory variable (ICAP-Ask). The different absolute relationship between LIBOR and ICAP-Ask in

[30] For a description of OLS regressions, see supra note 13.

2000-2004 and in 2013 will affect the covariance of the two series, which in turn impacts the calculated beta. Exchange plaintiffs are correct in that α is also impacted by this difference in spread, since α is, in part, a function of β. Nonetheless, unless β equals exactly 1, the spread between LIBOR and ICAP-Ask will never be differenced out in its entirety. That is, not only is the changing spread not entirely accounted for by the intercept term, the reason it is not so "absorbed" is because the changing spread impacts β, the estimate of how much but-for LIBOR should change given a change in the ICAP-Ask rate.

That is, we know that the inclusion of 2013 in Dr. Seyhun's clean periods is a significant driver of his results, even though the inclusion of 2013 in the clean periods not only introduces a significant data-quality issue but also introduces a qualitatively different relationship between ICAP-Ask and published LIBOR, a difference that is only partially absorbed into the intercept term. Absent an affirmative justification for adding 2013 to the clean periods and a more robust explanation for why such an addition does not skew the results, we conclude that Dr. Seyhun's inclusion of 2013 strongly suggests cherry-picking and renders the ICAP-Ask-based models of but-for LIBOR (and the Relative Artificiality and CDS Spread models of but-for LIBOR submissions) unreliable.[31]

[31] To the extent that Exchange plaintiffs suggest that a regression's high coefficient of determination, which is commonly referred to as "R-squared" and

1.1.2. Effect of Changes in LIBOR on EDF Prices

Dr. Seyhun opines that "statistical regression or other mathematical analyses" are available to show that "artificial LIBOR caused Eurodollar futures (and options) contract prices to be artificial," and that further analyses are available to "estimate the approximate amounts of such artificiality." (Seyhun Initial Report ¶ 12.b (emphasis added).) Dr. Seyhun bases this opinion on numerous regression models, from which he derives a number of "impact factors" that purport to measure, on a daily basis, how a change in LIBOR would have been reflected in EDF prices.

Across his two reports, Dr. Seyhun calculates 31 different values representing the "impact" of a change in 3-month LIBOR on each of the 44 Eurodollar contracts traded on the Chicago Mercantile Exchange: 10 in his initial report and 21 in his rebuttal report. (Seyhun Initial Report tbls.5, 10.2; Seyhun Rebuttal Report tbls.3, 6, 9, 12.) Dr. Seyhun also calculates corresponding sets of impact factors for changes in 1-month LIBOR and 6-month LIBOR. (E.g., Seyhun Rebuttal Report tbls.2, 4.) However, because Dr. Seyhun focuses his opinions on measuring the effect of changes in 3-month LIBOR, we so focus as well.

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measures the percentage of variation in the dependent variable that is explained by the selected explanatory variables, necessarily implies that regression's reliability and admissibility, (Exch. Pls.' Seyhun Opp'n 15 & n.17), we disagree. A regression may be unreliable, and therefore excludable, despite having a high R-squared, for being misspecified (including by failing to account for significant explanatory variables), among other reasons.

Broadly speaking, these 31 models vary in three primary ways: (1) whether the 3-month LIBOR series is contemporaneous or shifted backwards by one day (i.e., for each day, using the change in LIBOR between the day in question and the day after, rather than the change in LIBOR from the day before to the day in question); (2) whether changes in the implied 3-month forward rate are included as explanatory variables; (3) whether, and how many, lags of explanatory variables are used.[32]

Initial Report Table 5 presents the results of three models, each using shifted LIBOR and omitting as an explanatory variable changes in the implied 3-month forward rate.[33] The first model regresses changes in EDF prices on changes in LIBOR, with no lags. The second model regresses changes in EDF prices on lagged changes in EDF prices and changes and lagged changes in LIBOR, using the number of lags suggested by the Bayesian information criterion. The third model is like the second model, but uses the number of lags suggested by the Akaike information criterion.[34] Initial

[32] In his initial report, Dr. Seyhun also makes a data processing error in assembling his EDF price series involving "rollover" dates, as Dr. Culp documents. (Culp Initial Report app. D ¶¶ 388-400.) Dr. Seyhun's rebuttal report acknowledges and corrects this error. (Seyhun Rebuttal Report ¶¶ 184-87.)

[33] Dr. Seyhun's initial report bears no indication that he uses the shifted (next-day) 3-month LIBOR series rather than a contemporaneous series for the analyses contained in that report. However, in response to Dr. Culp's and Dr. Ordover's identification of the issue, Dr. Seyhun acknowledges in his rebuttal report that he did so, and explicitly indicates whether each model presented in his rebuttal report uses contemporaneous or next-day LIBOR. (Seyhun Rebuttal Report ¶¶ 84, 86.)

[34] These criteria each offer a method of determining how many lags of a given variable to use in a regression.

Report Table 10.2 presents the results of seven models, each using next-day LIBOR and including as an explanatory variable changes in the implied 3-month forward rate. Each model regresses changes in EDF prices on lagged changes in EDF prices, changes and lagged changes in 3-month LIBOR, and changes and lagged changes in the implied 3-month forward rate. The number of lags varies from 0 to 6, with one model for each number.

Dr. Seyhun's rebuttal report introduces 21 models intended to supersede, at least in part, the 10 models presented in his initial report. Rebuttal Report Table 3 presents the results of four models, three of which use the same regression specification as the three models presented in Initial Report Table 5. However, the results here differ from those presented in the Initial Report Table 5 because Dr. Seyhun has corrected the data processing error attributable to "rollover" days made in his initial report. By contrast, the fourth model regresses changes in EDF prices on changes in today's LIBOR and changes in next-day LIBOR. Dr. Seyhun uses the impact factors produced by one of these models for his damages estimates, though he does not specify which one. (Seyhun Rebuttal Report ¶ 86.) Rebuttal Report Table 6 presents the results of seven models, specified exactly as the seven models reported in Initial Report Table 10.2 (including the use of next-day LIBOR). As with the relationship between Rebuttal Report Table 3 and Initial Report Table 5, the results here differ from those

presented in the corresponding Initial Report Table 10.2 because Dr. Seyhun has corrected the data processing error attributable to "rollover" days. Rebuttal Report Table 9 presents the results of three models, specified identically to Initial Report Table 5, but using contemporaneous LIBOR rather than next-day LIBOR and correcting the data-processing error. Similarly, Rebuttal Report Table 12 presents the results of seven models, specified identically to Initial Report Table 10.2 (and Rebuttal Report Table 6), but also using contemporaneous LIBOR and correcting the data-processing error.

Rabobank offers several criticisms of these models: (1) that they cannot be properly interpreted to support causation; (2) that they fail to account for intraday movements in EDF prices; (3) that they fail to account minimum price increments in EDF prices; and (4) that they are contradicted by Dr. Culp's findings that EDF prices exhibit little reaction when LIBOR is published.[35]

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[35] Rabobank also criticizes Dr. Seyhun for having conducted these regressions using data from the full class period, January 1, 2005 to May 17, 2010, rather than from only Period 0. (Rabobank Seyhun Mem. 20.) This argument is not necessarily persuasive, as Dr. Seyhun's opinions regarding the relationship between changes in LIBOR and changes in EDF prices apply equally to changes in LIBOR caused by trader-based manipulation in Period 0 and changes in LIBOR caused by persistent suppression in the later part of the Class Period. Dr. Culp finds meaningfully different results when Dr. Seyhun's analyses are conducted separately only over Period 0 and not the Suppression Period (Culp Initial Report ¶ 216, tbl.6), which lends support for the theory that macroeconomic factors -- which differed substantially between Period 0 and the Suppression Period -- heavily influence the "impact factors" that Dr. Seyhun calculates.

We are similarly skeptical of Rabobank's arguments relying on inconsistency between Dr. Seyhun's findings and Dr. Culp's findings, as any such inconsistency would not call into question the reliability of Dr. Seyhun's methodologies. (Rabobank Seyhun Mem. 17-18; Exch. Pls.' Seyhun Opp'n 17-19.)

1.1.2.1. **Correlation, Not Causation**

Rabobank and Exchange plaintiffs primarily dispute whether Dr. Seyhun's models can be properly interpreted to suggest that changes in LIBOR cause determinable changes in EDF prices[36] -- Dr. Seyhun's ultimate opinion for which he relies on these models.

As to the 11 models relying on shifted (next-day) LIBOR, which, according to Dr. Seyhun, establishes that changes in tomorrow's LIBOR cause changes in EDF prices today, we reject them as unreliable at the threshold. The causal relationship purportedly supported by these regressions defies common sense: needless to say, a phenomenon must precede any effects that it causes, and Exchange plaintiffs offer no remotely cogent theory as to how changes in LIBOR manage to travel backward in time in order to affect EDF prices in the past.[37] Dr. Seyhun acknowledges this feature of his models, but contends that his methodology is proper because next-day LIBOR better incorporates "any economic event that happens during most of the U.S. business hours" and "U.S. business developments." (Seyhun Rebuttal Report ¶ 84; Exch. Pls.' Seyhun Opp'n ¶ 20.) That is, Dr. Seyhun asserts, using next-day LIBOR "captures the fact that Eurodollar futures prices can at times react earlier to interest-rate sensitive information before

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[36] The parties do not dispute that an EDF contract settles at the price of 100 minus LIBOR on the settlement date.

[37] Dr. Seyhun suggests at one point that panel banks may have engaged in insider trading (Seyhun Rebuttal Report ¶¶ 133, 137), but Exchange plaintiffs do not rely on this argument in their opposition to Rabobank's motion.

LIBOR actually changes." (Seyhun Rebuttal Report ¶ 87.) In offering these defenses of Dr. Seyhun's models, Exchange plaintiffs have apparently lost sight of the ultimate proposition that Dr. Seyhun set out to prove: that changes in LIBOR cause determinable changes in EDF prices. Exchange plaintiffs' references to "economic events," "business developments," and "interest-rate sensitive information" admit only one fair interpretation: namely, as a concession that those events, those developments, and that information confound the relationship between LIBOR and EDF prices presented in Dr. Seyhun's models, which offer no means of distinguishing changes in EDF prices caused by changes in LIBOR from other conditions causing changes in both EDF prices and LIBOR.

These confounding variables loom large, too, over Dr. Seyhun's remaining models relying on contemporaneous LIBOR. The fact that these models do not rely on the assumption that changes in LIBOR have retrospective effect does not remedy the more glaring error that Rabobank has identified and that Exchange plaintiffs have conceded. Because Dr. Seyhun's models offer no means of controlling for the effects of economic events and business developments, we conclude that they cannot reliably support Dr. Seyhun's causation opinion. See Bickerstaff v. Vassar Coll., 196 F.3d 435, 449-50 (2d Cir. 1999); Reed Constr. Data Inc. v. McGraw-Hill Cos., 49 F. Supp. 3d 385, 400 (S.D.N.Y. 2014); Bonton v. City

of New York, No. 03 Civ. 2833 (SAS), 2004 WL 2453603, at *3 n.32 (S.D.N.Y. Nov. 3, 2004).

In sum, "[t]he argument post hoc, ergo propter hoc, is not always a strong one; but the argument ante hoc, ergo propter hoc, must be a good deal weake[r]." 7 May 1861, 162 Parl Deb HC (3d ser.) 1677, 1679. Dr. Seyhun's contemporaneous LIBOR models cannot support his opinions regarding causation, as Exchange plaintiffs concede (and, curiously, emphasize) that LIBOR and EDF prices are each driven by business developments and economic events (Exch. Pls.' Seyhun Opp'n 20; Seyhun Rebuttal Report ¶ 84), and Dr. Seyhun's models offer no means of separating changes in EDF prices caused by those events rather than by changes in LIBOR. Dr. Seyhun's next-day LIBOR models fare even worse, not only suffering from the same confounding variable problem but also relying on the unfounded assumption that a change in LIBOR one day can effect changes in EDF prices in the past.

1.1.2.2. Intraday Variations in Price

Rabobank next argues that Dr. Seyhun's models fail to analyze intraday EDF data, opting instead to rely on the daily settlement prices calculated each day at 2:00 p.m. Chicago time. This method is unreliable, Rabobank contends, because it relies upon the unfounded assumption that any artificiality in LIBOR has an impact of constant magnitude over the 23 hours per day during which EDFs are traded. (Rabobank Seyhun Mem. 21-22.) Exchange plaintiffs

respond that no analysis of intraday EDF data is necessary "because there is a single LIBOR fix per day and a single LIBOR artificiality per day," and consideration of intraday measurements would be "futile for purposes of demonstrating the impact of LIBOR on EDF prices." (Exch. Pls.' Seyhun Opp'n 22.)

Notably, Exchange plaintiffs do not dispute that Rabobank's assertion that Dr. Seyhun's decision to conduct his analysis at a daily level incorporates the assumption that LIBOR artificiality has a single, constant amount of impact on EDF prices over a given trading day. But this assumption is inconsistent with Dr. Seyhun's assertions that EDFs "trade in efficient markets and react to all relevant information in a timely and complete manner," (Seyhun Rebuttal Report ¶ 124), and Exchange plaintiffs' assertion that "EDF prices continually incorporate all fundamental information" (Exch. Pls.' Seyhun Opp'n 22). And indeed, intraday variations in EDF pricing are of particular relevance to this action. Unlike, for example, the OTC or Lender plaintiffs, whose LIBOR-based instruments are pegged to LIBOR and reset on a periodic basis using published LIBOR on a given day, EDF traders' exposure to changes in LIBOR, even under Exchange plaintiffs' theory, was less periodic and less consistent. The record establishes that named plaintiffs actively opened and closed EDF positions within a single day (Ordover Initial Report sec. VIII), and Exchange plaintiffs themselves have acknowledged that these "in-and-out" traders make

up a large proportion of the putative class (Nov. 1, 2017 Hr'g Tr., 12:24-13:11, ECF No. 2341).

Given the importance of intraday trading in assessing the impact of LIBOR artificiality on EDF traders, Dr. Seyhun's failure to account for intraday variation in EDF prices further undermines the reliability of his ultimate opinion that statistical methods are available to determine that impact.

1.1.2.3. Minimum Price Increments ("Tick" Size)

Rabobank further criticizes Dr. Seyhun's model for failing to incorporate "ticks," or the minimum price increments in which EDF contracts trade. Under Rabobank's theory, the impact of trader-based manipulation on published LIBOR was often less than one tick in magnitude, and such a small extent of impact will not move EDF prices by one "tick" even assuming some causal relationship flowing from LIBOR to EDF prices. Therefore, Rabobank argues, Dr. Seyhun's model is further flawed for this failure to incorporate minimum tick sizes. (Rabobank Seyhun Mem. 22-23.) Exchange plaintiffs respond that Dr. Seyhun has in fact offered a formula to account for minimum price increments, and that Dr. Seyhun's failure to incorporate that formula into his models is of "no consequence" because "it involves a logical rather than an empirical argument." (Exch. Pls.' Seyhun Opp'n 22-23.)

Exchange plaintiffs are correct to the limited extent that Dr. Seyhun has indeed offered a formula regarding tick sizes. This

formula is, however, wholly unhelpful: Dr. Seyhun opines that the probability that LIBOR artificiality affected EDF prices is equal to the amount of LIBOR artificiality divided by the tick size for the EDF contract in question. (Seyhun Rebuttal Report ¶ 216.) But knowing that EDF prices will be affected, on average, a certain percentage of the time is insufficient; the operative question for class certification purposes is determining which prices were affected and which prices were not. That is, we are ultimately interested in the empirical question of how much EDF prices were affected by artificiality in LIBOR; knowing that EDF prices may or may not, as a matter of logic, have been impacted a certain percentage of the time is not responsive.

Exchange plaintiffs attempt to minimize the importance of tick sizes, reasoning that "[t]he minimum tick size will either nullify the effect of LIBOR artificiality on that day, or amplify it, based on the tipping point of the minimum tick size." (Exch. Pls.' Seyhun Opp'n 23.) We agree with this analysis of the impact of minimum tick sizes; indeed, it is the root of our concern regarding Dr. Seyhun's failure to consider tick sizes: the difference between amplification or nullification of LIBOR artificiality, i.e., some impact or no impact whatsoever, is difficult to overstate. Knowing which of the two will occur is of critical importance in assessing the impact of LIBOR manipulation on EDF prices, and Dr. Seyhun's models offer no aid in making that

assessment. While we could conceive of an additional rounding step that could be incorporated into Dr. Seyhun's models, it is Exchange plaintiffs' responsibility, and not ours, to provide models that are sufficiently complete so as to be reliable and helpful to the factfinder. Dr. Seyhun's failure to do so further supports the exclusion of his opinions.

1.1.3. Conclusion

Rabobank's motion to exclude Dr. Seyhun's opinions is granted. Dr. Seyhun's ultimate opinions, that classwide methods are available to determine the existence and extent of LIBOR manipulation and to determine the impact of that manipulation on EDF prices, are unreliable. The numerous models that Dr. Seyhun proposes are inadequate to support this conclusion, as Exchange plaintiffs have not established that those models are themselves reliable. Because Dr. Seyhun's opinions regarding damages rely on his opinions regarding the determination of LIBOR manipulation and resulting impact on EDF prices, we conclude that those opinions should be excluded as well.

Dr. Seyhun's multitude of models of artificiality in LIBOR and LIBOR submissions are rife with inconsistencies: they are internally inconsistent, they are inconsistent with Dr. Netz's opinions, and they are inconsistent with Exchange plaintiffs' own allegations of trader-based manipulation. Dr. Seyhun's models of changes in EDF prices caused by changes in LIBOR, though greater

in number, are no more reliable, as they are not only incapable of separating the effect of macroeconomic events but also incapable of actually determining when EDF prices would have changed in light of minimum price increments. We have previously questioned whether plaintiffs would "be able to show that LIBOR suppression of a particular amount would have caused a corresponding, determinable change in [EDF] trading prices," LIBOR VI, 2016 WL 7378980, at *22, slip op. at *59, and nothing in Dr. Seyhun's reports causes us to reconsider that skepticism.

1.2. Dr. Netz

Exchange plaintiffs present two reports from Dr. Janet Netz: (1) an initial report dated February 2, 2017 (Decl. of Thomas Elrod ex. 1, July 21, 2017, ECF No. 2121); and (2) a rebuttal report dated May 3, 2017 (Decl. of Thomas Elrod ex. 2, July 21, 2017, ECF No. 2121). We refer to these as the Netz Initial Report and the Netz Rebuttal Report. In her reports, Dr. Netz offers: (1) a number of opinions derived from her review of communications between traders; (2) the opinion that manipulation in LIBOR submissions impacted published LIBOR; (3) the opinion that changes in LIBOR cause calculable changes in prices of EDF contracts and options; and (4) a number of opinions regarding the calculation of damages. Based on Dr. Netz's credentials,[38] we conclude that she

[38] Dr. Netz is a founder and partner of ApplEcon, an economics consulting firm, and was formerly a professor of economics at Purdue University. She holds

is generally qualified to offer opinions of this type. We accordingly reject Rabobank's challenges to Dr. Netz's expert qualifications, but address them specifically in assessing Dr. Netz's specific opinions.

1.2.1. Opinions Based on Trader Communications

Dr. Netz devotes a substantial portion of her reports to analyzing documentary evidence of communications between traders, LIBOR submitters, and other individuals affiliated with panel banks. Relying on her interpretation of these documents, Dr. Netz opines that (1) panel banks manipulated their LIBOR submissions; (2) these manipulated LIBOR submissions impacted published LIBOR; (3) panel banks believed that LIBOR manipulation would affect EDF prices. In reaching these opinions, Dr. Netz also concludes that review of documentary evidence "is a common, class-wide method using common evidence that can prove liability." (Netz Rebuttal Report 10.)

At the outset, we note that Exchange plaintiffs and Rabobank dispute the scope of Dr. Netz's opinions. Rabobank asserts that Dr. Netz concludes that certain challenged conduct in fact occurred, and Exchange plaintiffs respond that Dr. Netz "does not opine that Defendants engaged in trader-based conduct or colluded in doing so," but rather opines only that "documents consistent

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a Ph.D. and M.A. in economics from the University of Michigan and a B.A. in economics from the University of California, Berkeley, has written a number of papers on antitrust economics, and has served as an expert witness in numerous antitrust cases. (Netz Initial Report app. A.)

with those allegations are available, and are common to the class." (Exch. Pls.' Netz Opp'n 8 (emphasis omitted).)

Dr. Netz's opinions simply are not limited in the way Exchange plaintiffs suggest. The Netz Initial Report contains numerous conclusions that, based on her review of trader communications, certain challenged conduct in fact occurred and Exchange plaintiffs were in fact impacted. For example, Dr. Netz opines that "[t]he discovery record shows that Defendants manipulated their LIBOR submissions in ways that were inconsistent with the reporting rules established by the BBA," that "Defendants engaged in coordinated trader-based manipulation," and that "Defendants engaged in suppression manipulation." (Netz Initial Report 13, 18, 20.) While Dr. Netz later opines on the availability and applicability of common evidence, for example that "[l]iability can be proven using common, class-wide methods based on common evidence," (Netz Rebuttal Report 4), these subsequent opinions do not supersede her earlier opinions. We consider different aspects of Dr. Netz's opinions in turn.

To the extent Dr. Netz offers her interpretation of trader communications to conclude that manipulation in fact occurred, these opinions are not based on Dr. Netz's "scientific, technical, or other specialized knowledge" as required by Rule 702(a). While Exchange plaintiffs correctly suggest that an expert's testimony may be permissible, for example, "to translate esoteric

terminology," United States v. Mejia, 545 F.3d 179, 190 (2d Cir. 2008), the trader communications that Dr. Netz interprets are clear on their face and "address issues of fact that [the trier of fact] is capable of understanding without the aid of expert testimony," In re Longtop Fin. Techs. Ltd. Sec. Litig., 32 F. Supp. 3d 453, 460 (S.D.N.Y. 2014).[39] Exchange plaintiffs fail to explain what specialized knowledge Dr. Netz drew upon to conduct her review of trader communications, and "[a]cting simply as a narrator of the facts does not convey opinions based on an expert's knowledge and expertise." Tourre, 950 F. Supp. 2d at 675. Our concern is heightened here, as Dr. Netz offers no explanation of how the communications that she reviewed were selected.

Similarly, to the extent Dr. Netz interprets trader communications to opine on the traders' actual motives and states of mind, these opinions are impermissible. See, e.g., Highland Capital Mgmt., L.P. v. Schneider, 379 F. Supp. 2d 461, 469-70 (S.D.N.Y. 2005); In re Rezulin, 309 F. Supp. 2d at 547. While she may opine on traders and LIBOR submitters' economic incentives as a general matter, those opinions may not extend to the traders and submitters' specific states of mind.

[39] Additionally, even if the trader communications interpreted by Dr. Netz required expert knowledge, we would question whether Dr. Netz's expertise in antitrust economics extends so far as to include terminology used by EDF traders.

Finally, to the extent that Dr. Netz opines on the existence of documents, these opinions are also excluded. The general proposition that some documents may pertain to all class members is obvious and not insightful, and Exchange plaintiffs offer no explanation why someone with Dr. Netz's expertise and qualifications is needed to offer it. At class certification, the operative question is whether LIBOR manipulation, once established through documents or other evidence, will pertain to all class members; the issue at this stage is not whether those documents exist. Indeed, Exchange plaintiffs offer no authority supporting their position that the "existence [of documents and data regarding defendants' conduct] is an appropriate topic for the opinion of Plaintiffs' expert on class certification," (Exch. Pls.' Netz Opp'n 7), and we find none.

Dr. Netz's opinions that documents exist establishing certain elements of liability, when properly understood, are opinions on the merits that are irrelevant at the class certification stage. An economic expert at class certification may permissibly opine that event *x* -- as established through documents or otherwise -- has an economic effect that is common to all class members. But she may not opine that event *x* in fact occurred, which remains for the trier of fact to determine. Even when such an opinion is formulated as "evidence exists establishing that event *x*

occurred," it is no more relevant at class certification and is no more admissible than a direct opinion on the merits.

Further, even if these opinions were offered at the merits stage, the latter formulation would be no less invasive of the province of the trier of fact. And as a corollary, it would be no more admissible at that stage, either. See Tourre, 950 F. Supp. 2d at 675 ("Expert testimony may not usurp the province of the judge to instruct on the law, or of the jury to make factual determinations.").[40] Therefore, even accepting Exchange plaintiffs' characterization that Dr. Netz "opine[s] on whether documents exist that could prove [their] allegation[s] on a common basis," (Exch. Pls.' Netz Opp'n 12), her opinions to that effect remain inadmissible.

In sum, we conclude that Dr. Netz's opinions interpreting documents and commenting on their existence are not admissible. Of course, this holding regarding Dr. Netz's opinions derived from her review of trader communications does not, by itself, preclude her from opining that manipulation of LIBOR submissions impacted LIBOR in a way common to all class members, or from opining that changes in LIBOR impacted EDF prices in a way common to all class

[40] To the extent that Dr. Netz's "evidence exists" opinions address the admissibility of evidence, those opinions are inadmissible for yet another reason: opining on a legal question, the resolution of which is left to the Court. See Tourre, 950 F. Supp. 2d at 975; see also Fed. R. Evid. 104(a).

members. We next consider whether those opinions are inadmissible for other reasons.

1.2.2. Effect of Manipulation on LIBOR

Dr. Netz subsequently opines that "manipulated LIBOR submissions affected published LIBOR." (Netz Initial Report 29.) As to trader-based manipulation, Dr. Netz first identifies, by reviewing documentary evidence, 163 instances of alleged trader-based manipulation. Dr. Netz determines that in 111 of those instances, the manipulated submission could have affected published LIBOR once the BBA's trimming methodology is considered. In turn, for each of those 111 instances, Dr. Netz assumes that, in the absence of manipulation, the panel bank in question would have made as its LIBOR submission the median submission reported by all panel banks on that day, and concludes that the replacement of a manipulated submission with the median submission would have affected published LIBOR on 65 of those days. Dr. Netz then highlights three specific examples (from the 65 days identified through her documentary analysis), examines the range of LIBOR submissions made on those dates, and explains how the alleged manipulation could have impacted published LIBOR. (Netz Initial Report 29-31.)

Rabobank contends that these opinions are inadmissible because they are not reliable and not helpful to the trier of fact. Specifically, Rabobank asserts that Dr. Netz's analysis is

unreliable because it is based on the "arbitrary and speculative assumption" that a panel bank would have submitted the median of all banks' submissions absent trader-based manipulation. (Rabobank Netz Mem. 12.) In opposition, Exchange plaintiffs respond that Dr. Netz's analysis is probative of the "hotly contested" question of whether trader-based manipulation of one bank's submission could have affected published LIBOR, given the trimming of submissions outside the interquartile range. (Exch. Pls.' Netz Opp'n 13-14.) Rabobank implicitly concedes that whether a single bank's LIBOR submissions could have impacted published LIBOR is a germane question, but disputes Exchange plaintiffs' characterization of the issue as "hotly contested" based on the consistency between Dr. Netz's and Dr. Hubbard's opinions on the issue. (Rabobank Netz Reply 4-5.)

We cannot conclude, as Rabobank urges, that Dr. Netz's opinions in this realm are entirely unhelpful. The ability to impact the market, the existence of artificial prices, and the defendant's causation of those prices are elements of a CEA claim, see, e.g., LIBOR I, 935 F. Supp. 2d at 713, slip op. at *94-95; In re Platinum & Palladium Commodities Litig., 828 F. Supp. 2d 588, 598 (S.D.N.Y. 2011), and the question of whether its submissions could impact published LIBOR is therefore "a fact in issue," Fed. R. Evid. 702(a).

We find little merit in Rabobank's contention that Dr. Netz's opinion here is irrelevant because she and Dr. Hubbard reach the same conclusion: that Rabobank could have impacted 3-month LIBOR on 46% of days in Period 0. The parties' agreement means that the issue is not as "hotly contested" as Exchange plaintiffs suggest, but does not render evidence directed to that fact irrelevant. See Old Chief v. United States, 519 U.S. 172, 179 (1997) ("The fact to which the evidence is directed need not be in dispute." (quoting Fed. R. Evid. 401 advisory committee's note)). Indeed, Rabobank's argument here is somewhat circular in that it relies on Dr. Netz's opinion, which it seeks to have excluded, to establish agreement on the point. The trimming methodology applied to LIBOR submissions in order to calculate published LIBOR introduces sufficient complexity such that Dr. Netz's analysis is at least somewhat helpful.

We also reject Rabobank's argument that Dr. Netz's opinion is unreliable because her median-replacement methodology relies on unsupported assumptions. As Dr. Netz disclosed in her initial report, she "do[es] not claim that the median LIBOR submission is necessarily the correct proxy for the but-for LIBOR submissions or that the LIBORs in Exhibit 2 are accurate measures of but-for LIBOR." (Netz Initial Report 29.) Rather, Dr. Netz opines that Rabobank's submissions could have impacted published LIBOR, which her median-replacement methodology is in fact capable of

demonstrating.[41] In the absence of any suggestion that she has implemented her methodology in an unreliable manner, we conclude that Dr. Netz's methodology is sufficiently reliable to support her opinion that Rabobank's submissions could impact published LIBOR.

1.2.3. Effect of Changes in LIBOR on EDF Prices

Dr. Netz, like Dr. Seyhun, opines that changes in LIBOR would have affected the prices of EDF contracts and options in a determinable way, basing this opinion on an arbitrage theory, her interpretation of several communications between traders and LIBOR submitters, and a correlation analysis. (Netz Initial Report 32-38.)

Rabobank contends at the threshold that Dr. Netz is unqualified to opine on the relationship between LIBOR and EDFs because her experience in economics broadly does not extend to the specific subject of EDFs and EDF trading. (Rabobank Netz Mem. 13-15.) Exchange plaintiffs' appeals to Dr. Netz's extensive experience in antitrust cases more broadly are not persuasive because the substance of the arbitrage theory that Dr. Netz propounds hardly resembles the issues of "supply, demand, pricing, etc." at play in a more typical antitrust case (Exch. Pls.' Netz

[41] Dr. Netz's median-replacement methodology maximizes the frequency with which Rabobank's submission impacts but-for LIBOR, though not the magnitude of that impact. A but-for LIBOR submission by Rabobank equal to the median of actual submissions ensures that the but-for submission will fall within the interquartile range and therefore will not be excluded by the trimming methodology.

Opp'n 15); indeed, no antitrust claims remain in the Exchange plaintiffs' action at all. Nonetheless, we conclude that Dr. Netz's prior research into arbitrage -- albeit in physical commodities markets -- is sufficient to allow her to opine on the subject in her reports. Indeed, as an economist, Dr. Netz has sufficient training and experience in econometrics in order to conduct statistical testing of correlation and causation and to interpret the results of those tests.[42]

Turning to reliability, we consider the bases for Dr. Netz's causation opinion: interpretations of certain trader communications, an analysis of correlations between published LIBOR and EDF prices, Dr. Seyhun's analyses, and two academic papers analyzing the relationship between LIBOR and EDF prices.

First, Dr. Netz interprets several communications between traders and LIBOR submitters to opine that "traders and submitters understood that any changes to LIBOR would immediately and directly impact Eurodollar futures prices." (Netz Initial Report 36.) These opinions impermissibly go to the beliefs and states of mind of those traders and submitters, and are inadmissible.[43] See

[42] Additionally, as we have already held, the various documents that Dr. Netz purports to interpret are understandable on their face and do not require particular expertise to interpret. It naturally follows that her resulting opinions should not be excluded based on a lack of qualifications (though they may be inadmissible for other reasons).

[43] Further, the documents bear little indication that the traders were referring to EDFs as opposed to other futures contracts or other LIBOR-based instruments, and Dr. Netz appears to assume so without justifying that assumption. Additionally, Dr. Netz's final example, regarding LIBOR

Highland Capital, 379 F. Supp. 2d at 469-70; In re Rezulin, 309 F. Supp. 2d at 547.

Second, Dr. Netz calculates the correlations between EDF prices and various tenors of LIBOR. (Netz Initial Report 36-37, ex. 3). From these correlations, her review of Dr. Seyhun's report, and two academic articles, Dr. Netz concludes that changes in LIBOR cause calculable changes in EDF prices. While correlations may be probative of causation in other circumstances, we conclude that they are not in this case: any correlation is confounded by the presence of macroeconomic events. See supra section III.1.1.2.1. Exchange plaintiffs argue that the presence of other factors impacting EDF prices "does not mean that LIBOR's effect disappears in the wake of these other factors," (Exch. Pls.' Netz Opp'n 20), but Exchange plaintiffs have not sufficiently established that LIBOR has an effect as an initial matter and they offer no means of separating the effect of changes in LIBOR (if any) from that of other factors.

Weaker still is Exchange plaintiffs' argument that parsing out "macroeconomic factors affecting interest rates" is unnecessary because they "exist in both the real world and in the but-for world." (Exch. Pls.' Netz Opp'n 20.) As Dr. Netz and Dr.

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manipulation on a settlement date, does not establish that traders believed changes in LIBOR caused changes in EDF prices generally. The proposition that the settlement price of an EDF is dependent on the settlement date's published LIBOR is uncontroverted. (E.g., Culp Initial Report ¶ 92).

Seyhun both concede, those factors confound a relationship between LIBOR and EDF prices, and the failure to parse them out in assessing the difference between the real world and the but-for world is therefore likely to construct a but-for world that differs from the actual world in ways other than the absence of alleged LIBOR manipulation.

Dr. Seyhun's causation opinions do not, as Exchange plaintiffs suggest, bolster Dr. Netz's causation opinions. (Exch. Pls.' Netz Opp'n 20.) To be sure, an expert may rely on the admissible opinions of another expert, see Gussack Realty Co. v. Xerox Corp., 224 F.3d 85, 94-95 (2d Cir. 2000); see also Fed. R. Evid. 703, but Dr. Netz is not entitled to rely on Dr. Seyhun's unreliable opinions for support. Indeed, Dr. Netz's opinions suffer from the same tick-size flaw in Dr. Seyhun's opinions: she similarly opines that she is able to determine the probability that EDF contract prices were impacted by changes in LIBOR, an opinion that is unhelpful.[44] See supra section III.1.1.2.3.

[44] Her further opinion that the impact of alleged LIBOR manipulation on EDF prices was "frequent and common" is additionally unsupported; it is unclear how she reaches that opinion based on the probabilities stated in her initial report. (Netz Rebuttal Report 20.) If on a given day the impact of manipulation on published LIBOR is less than half the minimum price increment, the probability that that manipulation impacted EDF prices would be less than 50% under Dr. Netz's formula and she would therefore be unable to conclude that the manipulation more likely than not impacted EDF prices.

Nor do the two academic articles cited by Dr. Netz[45] support her causation opinion. We are dubious that Grinblatt and Jegadeesh's analysis of weekly changes in LIBOR and EDF prices supports Dr. Netz's opinions regarding daily causation given the specific timing issues discussed at length in Dr. Seyhun's and Dr. Culp's reports. See Grinblatt & Jegadeesh at 1516-19. Similarly, Fung and Leung's analysis examines actual Eurodollar rates observed in the market, not LIBOR, see Fung & Leung at 119 n.6 (referring to Eurodollar rate quotes corresponding to the end of the trading day in London), which has different implications for the viability of any arbitrage strategy and, by extension, the relationship between changes in LIBOR and changes in EDF prices (e.g., Culp Initial Report ¶¶ 353-61, Culp Rebuttal Report ¶ 26).

Absent further support, Dr. Netz's correlation analysis can show only that -- correlation. Because Dr. Netz fails to bridge the analytical gulf between correlation and causation, her opinions that changes in LIBOR caused changes in EDF prices are excluded.

1.2.4. Damages

Finally, Dr. Netz offers several opinions regarding the calculation of damages: (1) that published LIBOR being lower than but-for LIBOR harmed class members who initiated or closed certain

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[45] Mark Grinblatt & Narasimhan Jegadeesh, Relative Pricing of Eurodollar Futures and Forward Contracts, 51 J. Fin. 1499 (1996) ("Grinblatt & Jegadeesh"); Hung-Gay Fung & Wai K. Leung, The Pricing Relationship of Eurodollar Futures and Eurodollar Deposit Rates, 13 J. Futures Markets 115 (1993) ("Fung & Leung").

positions during different periods (Netz Initial Report 38-44); (2) that all class members were harmed because it is "statistically improbable" that EDF traders are unlikely to have "benefited from or been unharmed by every single act of Defendants' LIBOR manipulation" (Netz Initial Report 44-46); (3) that class members also suffered common harm in the form of the time-value of money in their margin accounts (Netz Initial Report 46-47), and that (4) damages can be calculated on a formulaic basis (Netz Initial Report 48).

As a general matter, these opinions rely on Dr. Netz's earlier opinion that changes in LIBOR cause determinable changes in EDF prices and Dr. Seyhun's opinions to the same effect. Because we determine those opinions to be unreliable, Dr. Netz's derivative damages opinions are therefore insufficiently supported and are therefore inadmissible as well.

We also make three further specific observations. First, the parties' dispute over Dr. Netz's opinion that almost all traders were "harmed" as a result of LIBOR manipulation is, in essence, a dispute over the proper interpretation of the term "harmed." Exchange plaintiffs and Dr. Netz interpret "harmed" to mean "have been negatively impacted at least once" (i.e., the trader paid too much money or received not enough money from a single EDF transaction), even if the trader benefited overall from alleged LIBOR manipulation. (Exch. Pls.' Netz Opp'n 22-23). Rabobank

interprets "harmed" to mean a negative impact overall once all impacts of LIBOR manipulation have been taken into account. (Rabobank Netz Mem. 20-21). Given our conclusion that Dr. Netz's damages opinions are unreliable, we need not definitively resolve this question here.[46]

Second, Exchange plaintiffs' reliance on Mr. Miller's opinions to support Dr. Netz's statement that "data could be obtained from traders themselves, their brokers (FCMs), or the Chicago Mercantile Exchange" is unavailing. (Exch. Pls.' Netz Opp'n 24-25.) Dr. Netz did not rely on Mr. Miller's opinions and instead based her opinion on her "understanding that Eurodollar futures and options are transparent, public markets in which common practice and exchange and federal requirement[s] provide that customers for each transaction be identifiable." (Netz Initial Report 47 n.172.) We question whether Dr. Netz's expertise extends to a subject like the availability of trading records, and Mr. Miller's opinions provide no support because they are inadmissible as we discuss below.

Third, we do not share Rabobank's certainty that Dr. Netz's opinions regarding time-value damages are entirely irrelevant. Compare Helena Assocs., LLC v. EFCO Corp., No. 06 Civ. 861 (PKL),

[46] Under the CEA, "a plaintiff has standing to bring a commodities manipulation action only if he has suffered 'actual damages' as a result of defendant's manipulation." LIBOR II, 962 F. Supp. 2d at 620, slip op. at *26 (quoting 7 U.S.C. § 25(a)(1)). Establishing "actual damages" requires some notion of netting. See id.

2009 WL 2355811, at *4 (S.D.N.Y. July 29, 2009) (allowing a plaintiff to claim additional damages that were "more properly considered an extension of [its] original damages theory rather than a new theory of liability"), with Point Prods. A.G. v. Sony Music Entm't, Inc., No. 93 Civ. 4001 (NRB), 2002 WL 31856951, at *5 (S.D.N.Y. Dec. 19, 2002) (precluding a plaintiff "from changing its damage theory nine years into this litigation"). To the extent these damages may be taken into account, Dr. Netz's opinions regarding time-value damages on the one hand and formulaic calculation on the other are in considerable tension: Dr. Netz does not opine that all EDF traders were subject to the same margin requirements, or that they all shared the same time-value of money. (Netz Initial Report 46-47.) Indeed, an assessment of each trader's margin requirements and personal discount rates appears to necessitate individualized inquiry and does not appear susceptible to formulaic calculation.

1.2.5. Conclusion

Rabobank's motion to exclude Dr. Netz's opinions is granted in part and denied in part. Dr. Netz's opinions derived from her review of trader communications are excluded, regardless of whether she opines that manipulation actually occurred or whether she opines that documents establishing manipulation are available. Dr. Netz's opinions that changes in LIBOR cause calculable changes in EDF prices are excluded based on the reasons discussed at length

in our consideration of Dr. Seyhun's opinions, and her opinions regarding damages are excluded as well because they are reliant on her causation opinions. Dr. Netz's opinions regarding the impact of LIBOR submissions on published LIBOR, which address facts in issue, remain admissible.

1.3. Mr. Beevers

Exchange plaintiffs submit two reports from Mr. Craig Beevers: (1) an initial report dated February 2, 2017 (Decl. of David Kovel ex. A, July 10, 2017, ECF No. 2071); and (2) a rebuttal report dated May 3, 2017 (Decl. of David Kovel ex. B, July 10, 2017, ECF No. 2071). We refer to these as the Beevers Initial Report and the Beevers Rebuttal Report. In these two reports, Mr. Beevers offers several opinions across a number of subjects: (1) the adequacy of Rabobank's data productions; (2) a methodology for identifying trader-based manipulation; (3) a Monte Carlo analysis suggesting that panel banks engaged in collusive behavior; and (4) the frequency of alleged manipulation. We conclude that Mr. Beevers is generally qualified to offer these opinions based on his extensive experience in the financial industry.[47]

1.3.1. Data Adequacy

[47] Specifically, Mr. Beevers has worked at various financial institutions for more than 20 years, including as a trader and in certain risk management positions. (Beevers Initial Report app. A.) More recently, as counsel informed us at oral argument, Mr. Beevers was appointed by the Governor of Bank of England to the working group studying replacements for LIBOR. (Hr'g Tr. 16:24-17:3.)

Mr. Beevers first offers a number of opinions regarding Rabobank's data productions. After providing an overview of trade reporting and risk reporting systems both generally and at Rabobank specifically (Beevers Initial Report ¶¶ 24-39), Mr. Beevers opines that Rabobank's data productions have been deficient in certain ways, (Beevers Initial Report ¶¶ 46-63), and that trader-level records should be produced because they are necessary to his methodology for identifying trader-based manipulation and the burden to defendants is low. (Beevers Initial Report ¶¶ 40-45, 64-72).

1.3.1.1. Discussion of Trade Reporting and Risk Reporting Systems

Mr. Beevers may address trade reporting and risk reporting in the financial industry generally. We agree with Exchange plaintiffs that his experience provides him with the requisite knowledge and qualifies him to so opine. He may not, however, interpolate these general opinions regarding the financial industry as a whole to Rabobank specifically. Mr. Beevers lacks knowledge as to what data Rabobank in fact possesses, a point that he concedes and Exchange plaintiffs cannot seriously dispute. (Beevers Dep. 408:3-4, Decl. of Robert Lindholm ex. 73, July 7, 2017, ECF No. 2061). While we would view these Rabobank-specific opinions differently had they been anchored in specific legal or regulatory requirements, the fact that other banks possess certain data as a general matter says little about either (1) whether

Rabobank ever had this data or (2) Rabobank has maintained this data until now. Therefore, Mr. Beevers's opinions are excluded to the extent they suggest that Rabobank in fact maintains certain reporting systems or possesses certain data.

1.3.1.2. Specific Data Deficiencies

Mr. Beevers next opines that Rabobank's productions are deficient in four specific ways: (1) certain risk management reports are missing; (2) data files contain inconsistent formatting for date information; (3) inconsistent mapping information was provided; and (4) certain datasets appear to be incomplete and contain duplicates.

Mr. Beevers's opinion that certain risk management reports are missing is not admissible for the reasons discussed above: Mr. Beevers lacks knowledge as to what data Rabobank in fact possesses (or possessed) and is forced to speculate as to the existence of those reports. This speculation is plain on the face of his opinions, suggesting, for example, that certain reports "are routinely emailed to desk-wide or division-wide distribution lists on a periodic basis," and that he therefore "believe[s] such reports may exist in Rabobank's email archive." (Beevers Initial Report ¶¶ 46-47 (emphasis added).) We find similarly speculative Mr. Beevers's contention that Rabobank did not produce all of its trade data because the number of trades appears "to be too low by a factor of approximately two" based solely on the opinion of

unidentified "experienced money market traders." (Beevers Initial Report ¶ 58.)

As to Mr. Beevers's remaining criticisms, each relies on the implicit assumption that Rabobank possessed immediately tractable data and should have produced it. Mr. Beevers identifies no basis for this assumption, and we find no authority for such a proposition.[48] Rather, the process of data cleansing and ensuring that data are tractable is not only a topic addressed extensively in the literature, see, e.g., Jonathan I. Maletic & Andrian Marcus, Data Cleansing: A Prelude to Knowledge Discovery, in Data Mining and Knowledge Discovery Handbook, (Oded Maimon & Lior Rokach, eds. 2005) ("Data entry and acquisition is inherently prone to errors, both simple and complex."), but is also a task performed by experts with regularity (including by Dr. Willig in this case (Willig Initial Report app. 4), see, e.g., DL v. District of Columbia, 194 F. Supp. 3d 30, 40 (D.D.C. 2016) ("Although the primary focus of [the expert's] testimony in those cases has been statistical analysis, he would not have been able to perform that analysis if he had not initially performed the programming and required data cleaning."); Callahan v. City of Chicago, 78 F. Supp. 3d 791, 815 (N.D. Ill. 2015) ("[The expert] 'cleaned' the data set before using

[48] Mr. Beevers's specific criticism of "nonsensical" date information in certain records is also not supported by the example he identifies at paragraphs 52 and 53 of his initial report. He asserts that "the maturity date is nonsensical insofar as the maturity date is before the trade date," but the identified maturity date of September 22, 2015 is obviously well after the trade date of June 10, 2005. (Beevers Initial Report ¶¶ 52-53.)

it . . . .”); In re Polyurethane Foam Antitrust Litig., 314 F.R.D. 226, 278 (N.D. Ohio 2014) (referencing an expert’s discussion of “the extent of each Defendant’s transactional data and the ‘cleaning’ steps [the expert] took to make the data usable”). Indeed, Mr. Beevers’s expectation appears particularly unrealistic here given the breadth of the data that he seeks and Rabobank’s scale as an entity.

We therefore conclude that Mr. Beevers’s opinions purporting to identify specific deficiencies in Rabobank’s data productions are speculative, and therefore inadmissible.

1.3.1.3. Production

Finally, Mr. Beevers offers a number of opinions addressing whether certain trader-level data must be produced. He opines that trader-level records are “required” in order “to analyze the impact of trader-based manipulation,” (Beevers Initial Report ¶ 64), and that this necessity outweighs the burden on defendants of making this production, (Beevers Initial Report ¶¶ 40-41). Therefore, Mr. Beevers concludes, “data quality issues presented by Rabobank not only limit the depth and quality of analysis available to civil litigants, but likely substantially impeded regulatory investigations” and that this poor quality “dictates that Defendants should be required to remediate and supplement the productions to date.” (Beevers Initial Report ¶¶ 41, 72.) These opinions are inadmissible both because they are irrelevant and

because they offer legal conclusions (including on issues that we have already considered and adjudicated).

These opinions are irrelevant because Exchange plaintiffs need not identify all instances of trader-based manipulation at this stage. Exchange plaintiffs' defense of their relevance is incoherent: they simultaneously contend that Mr. Beevers must explain why he "has not thus far been able to identify all instances of trader-based manipulation at Rabobank during Period 0" on the one hand (Exch. Pls.' Beevers Opp'n 8), and that "Plaintiffs (through Mr. Beevers) are not required to identify all instances of trader-based manipulation at this stage" on the other (Exch. Pls.' Beevers Opp'n 11). Of course, if all instances of manipulation need not be identified at class certification, Mr. Beevers need not explain his failure to do so. Indeed, we highlight here Exchange plaintiffs' assertion that "Mr. Beevers takes no position on" the question of whether "production of Defendants' trade data was necessary for purposes of Plaintiffs' class certification motion." (Exch. Pls.' Beevers Opp'n 11 (emphasis omitted).) Accepting this concession, Mr. Beevers's opinions are plainly irrelevant.

Further, these opinions amount to legal conclusions regarding the scope of discovery, one that impinges on our responsibility to assess whether the discovery being sought is "proportional to the needs of the case." Fed. R. Civ. P. 26(b)(1). To the extent Mr.

Beevers's opinions regarding additional production overlap with Exchange plaintiffs' prior motion to compel the production of certain trading records (Letter from Christopher Lovell & David Kovel to the Court, Nov. 4, 2016, ECF No. 1636), those issues have already been resolved by our order denying that motion, see Dec. 6, 2016 Order, ECF No. 1667, and Mr. Beevers's opinions are squarely precluded by that order. To the extent that Exchange plaintiffs rely on Mr. Beevers's opinions to request reconsideration of our order denying Exchange plaintiffs' motion to compel certain trading data, we reaffirm our conclusion that the burden of making available Exchange plaintiffs' requested production -- data sufficient to establish trader positions for every single trader at Rabobank over the class period -- is not proportional to the relevance and importance of that data, see Fed. R. Civ. P. 26(b)(1).[49]

But even if these opinions extend to data not previously sought as Exchange plaintiffs suggest (Exch. Pls.' Beevers Opp'n 11), that breadth does not change their fundamentally legal nature or their inadmissibility. To the extent that they rely on Mr. Beevers's opinions to so argue, we conclude that such a request is remarkably untimely. The class certification schedule for this case was established in February 2016, see Scheduling Order, Feb.

[49] Our skepticism is confirmed by the amorphousness of the correlation analysis proposed by Mr. Beevers, which we address fully below.

23, 2016, ECF No. 1327, and Exchange plaintiffs offer no explanation for why this information could not have been requested earlier. Rather, they have had more than ample time to seek additional discovery necessary for class-certification purposes, and cannot now complain of any insufficiency.[50]

Ultimately, this initial portion of Mr. Beevers's opinions reduces to the proposition that the data Rabobank has produced is not as tractable as he and Exchange plaintiffs would desire for class certification purposes. But Mr. Beevers is not permitted to offer a definition of completeness that is untethered from any concrete requirements (beyond his personal definition of what is "necessary") and then opine that Rabobank's productions fail to meet that wholly subjective standard. Even if these opinions are correct -- and the record strongly suggests that at least some are not -- they are irrelevant to our consideration of the Exchange plaintiffs' class certification motion. To the extent Exchange plaintiffs assert, relying on Mr. Beevers's expert opinions, that they were afforded insufficient class certification discovery, we reaffirm our decision to deny Exchange plaintiffs' motion to compel and further conclude that the time to litigate class-certification discovery issues has long ago passed.

[50] Again, Mr. Beevers's opinions regarding the "necessity" of trader-level records in establishing trader-based manipulation directly conflict with those of Dr. Seyhun, who opines that TBM can be identified using various methodologies, none of which rely on the trader-level records sought by Mr. Beevers.

1.3.2. Identification of Trader-Based Manipulation

Next, Mr. Beevers offers a process for identifying trader-based manipulation, consisting of three different techniques: (1) identifying "anomalous" submissions based on certain mathematical criteria; (2) interpreting trader communications for "corroborating evidence" of manipulation; and (3) analyzing trader positions to see if LIBOR manipulation benefited particular traders. (Beevers Initial Report ¶¶ 73-87; Beevers Rebuttal Report ¶¶ 40-62.) Rabobank and Exchange plaintiffs dispute whether these three components of Mr. Beevers's methodology should be analyzed individually or together; Exchange plaintiffs contend that "Rabobank improperly breaks up Mr. Beevers' methodology into three steps" and suggest that the three components should not be analyzed separately. (Exch. Pls.' Beevers Opp'n 12.)

Mr. Beevers apparently disagrees with Exchange plaintiffs' argument. In responding to Dr. Hubbard's criticism that his methodology is dependent on review of trader communications, Mr. Beevers asserts that his "anomalous submission" criteria are sufficient to identify trader-based manipulation standing alone, as the subsequent steps merely "corroborate" the initial findings of anomalies. (Beevers Rebuttal Report ¶ 57.) But even if Mr. Beevers's methodology were to consist of three steps to be considered together, Daubert requires as a matter of law that "an expert's analysis be reliable at every step." Amorgianos, 303

F.3d at 267. Because "any step that renders the analysis unreliable under the Daubert factors renders the expert's testimony inadmissible," id. (emphasis omitted) (quoting In re Paoli, 35 F.3d at 745), we analyze Mr. Beevers's three techniques individually.

1.3.2.1. Anomalous Submissions

First, Mr. Beevers offers a two-part definition for what constitutes an "anomalous" submission. Under the first part, for a given bank and given tenor, a submission is considered anomalously high (or low) if three conditions are met: (1) the bank made a submission greater (or less) than published LIBOR; (2) the bank's submission is higher (or lower) than the submission made the prior day; and (3) compared to the prior day, the increase (or decrease) in the bank's submission was greater in magnitude than the corresponding change in published LIBOR. (Beevers Rebuttal Report ¶ 47.) Under the second part, for a given bank and any two tenors, one or both submissions[51] are considered anomalous if two conditions are satisfied: (1) the bank increased its submission in one tenor compared to the day before and decreased the submission in the other tenor, and (2) such

[51] Mr. Beevers's reports leave ambiguous whether this second criterion identifies one submission or both submissions as anomalous. At oral argument, counsel clarified that whether one submission is considered anomalous or both submissions are "depends on the circumstances and requires a little bit more facts." (Hr'g Tr. 16:18-19.) This response is hardly illuminating, though as we explain below, the ambiguity left in Mr. Beevers's opinion here does not affect our conclusion as to its admissibility.

directionally dissimilar changes are observed for fewer than 25% of panel banks on the day in question. (Beevers Rebuttal Report ¶ 50.)

We agree with Exchange plaintiffs to the limited extent they contend that an expert opinion need not have been peer reviewed and need not be generally accepted in the community in order to be admissible. See Daubert, 509 U.S. at 593 (holding that "peer review" is "relevant, though not dispositive" and rejecting the general acceptance standard set forth in Frye v. United States, 293 F. 1013 (D.C. Cir. 1923)). We agree with Rabobank, however, that Mr. Beevers's methodology for identifying anomalous submissions is insufficiently reliable.

As an initial matter, Mr. Beevers provides scant explanation for how this two-part definition for anomalous submissions was developed. Mr. Beevers's initial report simply defines "anomalous" in a footnote without further explanation. (Beevers Initial Report ¶ 76 n.7.) Standing alone, this definition would be little more than Mr. Beevers's inadmissible ipse dixit that the submissions in question were anomalous. Mr. Beevers's rebuttal report is slightly more detailed, explaining that his criteria are designed to capture instances where one bank "has raised its submission from one day to the next by an inexplicably large amount" and where changes across tenors cannot be explained by "a general [yield] curve steepening or flattening," but the jump from

this explanation to the specific mathematical criteria applied appears to be supported only by his ipse dixit, which is insufficient. (Beevers Rebuttal Report ¶¶ 45-54, n.16.)

Indeed, it appears that the first part of the two-part definition would tend to find, for banks whose submissions were consistently above (or below) published LIBOR, anomalous submissions over periods when interest rates were consistently increasing (or decreasing), as the first two criteria would generally be satisfied. As to the second, Mr. Beevers does not explain whether one or both submissions are considered anomalous if the two criteria are satisfied. Accepting counsel's representation at oral argument that the determination of whether one or both submissions are considered anomalous depends on further inquiry into the circumstances (Hr'g Tr. 16:15-19), Mr. Beevers's reports do not explain when both submissions are considered anomalous, when only one submission is considered anomalous, and if only one submission, which one of the two. Absent some explanation as to how these additional "circumstances" and "facts" are analyzed, and given the implementation error that Mr. Beevers has made in applying these criteria (Hubbard Rebuttal Report ¶ 53 n.111), we cannot conclude this part of Mr. Beevers's methodology is sufficiently reliable such that it is admissible.

Our hesitation is confirmed by the nonsensical results produced by these criteria when they are applied to actual LIBOR

submissions made outside of Period 0 and the but-for LIBOR submissions calculated by Dr. Seyhun. Specifically, Mr. Beevers's methodology characterizes as anomalous 27 percent of Rabobank's 3-month LIBOR submissions made between 2000 and 2002, and 19 percent of Rabobank's 3-month LIBOR submissions made in 2003 and 2004,[52] both of which are greater than the 17 percent identified during Period 0. (Hubbard Rebuttal Report ¶ 58, ex. 29.) Exchange plaintiffs do not dispute these statistics, but assert that an evaluation of the results produced by Mr. Beevers's criteria is "impermissible under Daubert," and that these results are not implausible because some evidence suggests that trader-based manipulation occurred as early as 2000. (Exch. Pls.' Beevers Opp'n 13-14.)

But as we have discussed, methodology and results "are not entirely distinct from one another," Amorgianos, 303 F.3d at 266 (quoting Joiner, 522 U.S. at 146), and indeed, Rabobank's robustness testing of Mr. Beevers's methodology relates directly to two of the reliability factors identified by the Supreme Court: whether a methodology "can be (and has been) tested" and a methodology's "known or potential rate of error," Daubert, 509 U.S. at 593-94. In this case, the high rates of anomalous submissions between 2000 and 2004 identified by Mr. Beevers's

[52] This statistic is calculated by differencing the figures presented in Exhibit 29 of the Hubbard Rebuttal Report.

methodology suggests that it was not well-tested and that it has a high potential rate of error.

Exchange plaintiffs additionally respond that Rabobank engaged in trader-based manipulation as early as 2003 and that there is therefore no reason to expect Mr. Beevers's methodology to show zero instances of anomalous submissions during this time. But even assuming that Rabobank engaged in trader-based manipulation as early as 2003, Exchange plaintiffs offer no explanation for why, considering the three periods 2000-2002, 2003-2004, and Period 0, Mr. Beevers's analysis identifies the lowest rate of anomalous submissions in the third (17%) and the highest rate of anomalous submissions in the first (27%) when Exchange plaintiffs' allegations and proffered evidence of trader-based manipulation is strongest in the third and concededly nonexistent in the first. While sporadic findings of anomalous submissions prior to Period 0 might be considered indicia of only a minor flaw in Mr. Beevers's criteria, the substantial rates of anomalous submissions found prior to Period 0 and the exactly-backwards relationship between Mr. Beevers's findings of manipulation and Exchange plaintiffs' allegations suggest that Mr. Beevers's methodology has a high rate of error and is insufficiently reliable.[53]

[53] Mr. Beevers's criteria apparently also identify high rates of anomalous submissions in 2015 and 2016, periods in which Exchange plaintiffs have not

Similarly, Mr. Beevers's criteria characterize as anomalous a substantial percentage of the but-for LIBOR submissions calculated by Dr. Seyhun -- that is, the submissions Dr. Seyhun contends that panel banks would have made in the absence of LIBOR manipulation.[54] Specifically, Mr. Beevers's methodology identifies as anomalous 5% to 35% of Rabobank's "but-for" LIBOR submissions calculated by Dr. Seyhun, depending on which of Dr. Seyhun's models is considered. Indeed, for two of Dr. Seyhun's models, Mr. Beevers's methodology finds more anomalies in Rabobank's but-for LIBOR submissions than in Rabobank's actual (allegedly manipulated) submissions. (Hubbard Rebuttal Report ¶¶ 70-72, ex. 31.)

In response, Exchange plaintiffs assure us that any inconsistency does not bear on the reliability of Mr. Beevers's opinions because (1) the anomalous-submission definition is only the first step of Mr. Beevers's overall methodology and (2) any disagreement between Mr. Beevers and Dr. Seyhun need not be resolved now. (Exch. Pls.' Beevers Opp'n 14-15). Though Exchange plaintiffs accuse Rabobank of making an "illogical, apples-to-oranges comparison" by comparing Mr. Beevers's "anomalous

alleged, and cannot credibly allege, manipulation. (Hubbard Rebuttal Report ¶ 58 n.120.)

[54] Mr. Beevers's and Dr. Seyhun's methodologies also frequently yield directionally inconsistent results. Dr. Seyhun's models identify artificiality in the opposite direction from artificiality identified by Mr. Beevers's methodology on 23% to 43% of the days in Period 0 on which Mr. Beevers identifies anomalous 3-month LIBOR submissions by Rabobank. (Hubbard Rebuttal Report ¶ 63, tbl.3, ex. 30.)

submissions" analysis to the results of Dr. Seyhun's methodology (Exch. Pls.' Beevers Opp'n 15), Mr. Beevers himself asserts that his analysis is not necessarily reliant on subsequent steps, (Beevers Rebuttal Report ¶ 57). And based on our previously expressed skepticism that the concept of a "battle of the experts" can extend to this extent of disagreement between a party's own experts, we conclude that poor performance of Mr. Beevers's anomalous-submission definition when applied to Dr. Seyhun's findings strongly suggests an untested methodology with an unacceptably high rate of error.

1.3.2.2. Trader Communications

Having identified submissions of interest based on his two two-part definition of "anomalous submissions," Mr. Beevers next proposes to review various trader communications, including "emails, instant message conversations, and recorded conversations." (Beevers Rebuttal Report ¶¶ 11, 57.) We conclude this step is unreliable because it amounts to no methodology at all.

Exchange plaintiffs assert that Mr. Beevers has in fact offered a methodology, "part of which involves applying Mr. Beevers' vast experience and knowledge gained through his work in the dealing rooms of financial institutions." (Exch. Pls.' Beevers Opp'n 15.) Such a vague methodology is not a methodology at all, and it is certainly not a methodology that can or has been tested

or one with a known or potential rate of error. In the absence of some recognizable, describable methodology beyond an appeal to Mr. Beevers's qualifications, his opinions that certain documents "clearly show" manipulation whereas others do not (Beevers Rebuttal Report ¶ 58) would be "the essence of unverifiable subjectivity, amounting to the sort of ipse dixit connection between methodology and conclusion" that is properly excluded, Nimely, 414 F.3d at 399.[55]

1.3.2.3. Individual Trader Positions

At step three, Mr. Beevers proposes to "consider the positions of individual traders on [each day with an anomalous submission] to see if there was a relationship between the profit motive (trader position such that a trader or group of traders would benefit from the anomalous submission) and the submission." (Beevers Rebuttal Report ¶ 42.) Specifically, Mr. Beevers intends to undertake "a comparison of which traders were long or short on each particular day with unusually high or low LIBOR submissions," with a "high correlation" between trader positions and anomalous

[55] Additionally, we would question whether opinions based on the interpretation of trader communications are products of Mr. Beevers's expertise. Contrary to Exchange plaintiffs' suggestion that the interpretation of the communications between traders in question involves "parsing through the technical jargon and terminology" found in those communications and "requires experience and familiarity with the practices and customs of dealing rooms," (Exch. Pls.' Beevers Opp'n 16), Dr. Netz -- did not claim any such experience -- was able to undertake a similar exercise interpreting trader communications (Netz Initial Report 13, 18, 20). Indeed, Exchange plaintiffs identify no instances in which the communications that Mr. Beevers canvasses for indicia of trader-based manipulation contains "technical jargon and terminology" obscuring their meaning; their attempt to recast a reading comprehension exercise as something more is unavailing.

LIBOR submissions serving as "strong corroboration for manipulation." (Beevers Rebuttal Report ¶ 55.) Mr. Beevers does not actually undertake such an analysis, asserting that "the lack of reliable trader-level position data limits [his] ability" to conduct it, but opines that doing so would be feasible once "Defendants produce a complete set of accurate historical trading data for each day during the Class Period that identifies the relevant trader for each position." (Beevers Initial Report ¶ 75.)

Rabobank contends that this step of Mr. Beevers's analysis is governed only by arbitrary criteria susceptible to cherry-picking, especially in light of Mr. Beevers's opinions that different traders within a single bank will often have different exposures to LIBOR (and therefore different profit motives) and in light of Mr. Beevers's failure to explain what he means by a "relationship" between traders' profit motive and a bank's LIBOR submission or what constitutes a "high correlation." (Rabobank Beevers Mem. 11-12.) Exchange plaintiffs respond that Mr. Beevers intends to "perform statistical analysis that would detect those traders who systematically benefit from Rabobank's LIBOR submissions over time," namely, significance testing of the relationship between a trader's positions and Rabobank's LIBOR submissions. (Exch. Pls.' Beevers Opp'n 17.)

As an initial matter, we share Rabobank's skepticism as to whether Mr. Beevers's reports can be fairly interpreted to propose

statistical testing. (Rabobank Beevers Reply 8.) The closest Mr. Beevers comes to setting forth any statistical test (which he would perform once he receives all the data he desires) is referencing a "high correlation" serving as "strong corroboration for manipulation." (Beevers Rebuttal Report ¶ 55.)

This lack of detail renders unpersuasive plaintiffs' defense of Mr. Beevers's opinions, even accepting plaintiffs' post hoc exegesis of his methodology. Mr. Beevers could have selected certain statistical tests to perform, discussed the data series to which he would have applied his selected tests (even if the series themselves have not yet been generated), identified what his null hypothesis would have been, and determined the level of statistical significance he would have demanded in order to reject the null hypothesis.[56] But he has done none of those things, and his failure to do so makes examining the reliability of his methodology essentially impossible. While incomplete data may, understandably, impair an expert's ability to fully conduct the analyses that he proposes, it does not excuse the failure to construct an analytical framework under which the data is to be

[56] "In conducting a formal significance test, researchers start from the hypothesis they are seeking to disprove, called the 'null hypothesis' or 'null.' They then ask: Assuming the null hypothesis is true, what is the probability of observing data that conflict with the null hypothesis to at least as great an extent as do the data actually observed? . . . If the answer falls below a predetermined significance threshold (often 5%), then the null hypothesis is sufficiently inconsistent with the data that it is deemed 'rejected,' and the result is deemed 'statistically significant.'" Nat. Res. Def. Council, Inc. v. Rauch, 244 F. Supp. 3d 66, 89-90 (D.D.C. 2017) (citations omitted).

analyzed. The flaw in Mr. Beevers's opinion is the latter, not the former, and we therefore conclude that his opinion is inadmissible.

Of course, even if Mr. Beevers's correlation methodology had been more fully developed, we would conclude that any opinions resulting from the application of that methodology would be inadmissible for lack of reliability. The first step of Mr. Beevers's analysis is unreliable for the reasons discussed above, and any correlation analysis between trader positions and Rabobank's LIBOR submissions to be performed at the third step will rely on those "anomalous subimssions" identified at that first step as an input. (Beevers Rebuttal Report ¶¶ 42, 55.) Because Mr. Beevers would not be conducting this correlation analysis using reliable data, any results that it produced would be similarly unreliable. See Nimely, 414 F.3d at 397 (requiring both "reliable data and methodology"); see also Fed. R. Evid. 702(a)(2).

In sum, we conclude that Mr. Beevers's proposed three-step method for identifying trader-based communications is inadmissible. Each step is unreliable as we have explained, and three unreliable steps does not an admissible methodology make.

1.3.3. Monte Carlo Analysis

Next, Mr. Beevers conducts a statistical "Monte Carlo" analysis. "Monte Carlo simulation involves repeated random sampling of various potential scenarios to compute an average

result [and is] a technique which obtains a probabilistic approximation to the solution of a problem by using statistical sampling techniques." Advanced Analytics, Inc. v. Citigroup Glob. Markets, Inc., No. 04 Civ. 3531 (LTS)(HBP), 2009 WL 7133660, at *1 n.5 (S.D.N.Y. Aug. 5, 2009), report and recommendation adopted in part and rejected in part, 2010 WL 4780772 (S.D.N.Y. Nov. 22, 2010). Based on this analysis, Mr. Beevers opines that further merits discovery will allow plaintiffs to discover more instances of trader-based manipulation, as he concludes that "submissions are not independent and are thus consistent with collusion." (Beevers Initial Report ¶¶ 88, 100.)

As with Dr. Seyhun and Dr. Netz's probabilistic opinions, we conclude that Mr. Beevers's opinion here is irrelevant at class certification and not helpful to the trier of fact. Even assuming that Mr. Beevers's Monte Carlo analysis is reliably implemented, it cannot prove that any trader-based manipulation actually occurred, let alone on which days, by which banks, the extent to which it actually impacted LIBOR submissions, or whether those findings pertain to all class members or only certain class members. Indeed, Mr. Beevers's Monte Carlo analysis, by construction, yields results for an aggregated period and across pairs of banks at its most detailed level. Therefore, contrary to Exchange plaintiffs' contentions, Mr. Beevers's Monte Carlo analysis neither "serve[s] to show Rabobank's anomalous

submissions" nor "identif[ies] collusive behavior between panel banks" with any specificity. (Exch. Pls.' Beevers Opp'n 19.)

But even if Mr. Beevers's analysis were helpful to the trier of fact, it would founder on reliability grounds. Mr. Beevers's Monte Carlo simulation analyzes the relationship between a pair of banks' LIBOR submissions for every pair of panel banks, and analyzes the probability that the submissions are both above or both below a reference rate (that is, the submissions have the same "directionality" compared to the reference rate). (Beevers Initial Report ¶¶ 88-110.) Mr. Beevers considers two different reference rates: published LIBOR and the mode of the panel banks' LIBOR submissions (i.e., the most frequent submission on a given day).[57]

Mr. Beevers then calculates, through random simulation, the expected probability that, conditional on one bank's submission having one directionality, that each other bank's submission has the same directionality. In performing this calculation, Mr. Beevers first determines the percentage of time each bank's submission is above, equal to, or below the reference rate. (Beevers Initial Report tbls.1-2.) With these directionality

[57] In one instance, Mr. Beevers refers to the "median" value (Beevers Initial Report ¶ 93), though he more often refers to the second reference rate as the "mode" or the "modal value" (Beevers Initial Report ¶¶ 95, 98, 99, tbl.2). Assuming that Mr. Beevers did in fact use the mode as his second reference rate, Mr. Beevers does not explain his methodology when two different submissions were equally frequent on a given day.

distributions calculated, Mr. Beevers then runs a large number of simulations.[58] In each simulation, using those distributions calculated at the first step, Mr. Beevers randomly determines, for each bank, whether that bank's submission was above, at, or below the reference rate. Mr. Beevers then aggregates the results of these numerous simulations in order to calculate the "expected" probabilities of one bank's submissions having a certain directionality given another bank submissions having the same directionality, under the assumption that the directionality of one bank's LIBOR submission is independent of the directionalities of all other banks' LIBOR submissions.

Mr. Beevers then compares these "expected" directionality probabilities to the actual probabilities observed, and concludes that the deviation of the actual probabilities from the expected probabilities are generally statistically significant. (Beevers Initial Report ¶ 101.) From this result, Mr. Beevers opines that "submissions are not independent and are thus consistent with collusion." (Beevers Initial Report ¶ 100.)

At the outset, we note that randomness is a deliberate feature of Monte Carlo simulation and reject Rabobank's arguments to the extent they suggest that this randomness by itself is a flaw rendering this analysis unreliable. (Rabobank Beevers Mem. 15.)

[58] Mr. Beevers does not specify how many simulations are incorporated into the results presented in his report beyond "many thousands." (Beevers Initial Report ¶ 94.)

Under Mr. Beevers's framework, each bank's submission on a given day can fall into one of three categories, meaning that for 16 banks, there are three to the 16th power, or more than 43 million, permutations of the relationships of each bank's submission to the reference rate. The "expected" probabilities that Mr. Beevers calculates would, most rigorously, be calculated based on all 43 million permutations. But given the computational difficulties involved in so calculating, Monte Carlo simulation is helpful in arriving at a reasonable approximation for the "expected" probabilities that Mr. Beevers presents.

While Monte Carlo simulation is a generally accepted technique, general acceptance does not end the reliability inquiry.[59] Problems in implementing the technique may nonetheless render it unreliable as applied, Mr. Beevers's Monte Carlo simulation includes at least two flaws undermining its reliability. First, the Monte Carlo simulation relies on probability distributions of each bank's LIBOR submissions being above, equal to, or below, the reference rate calculated based on Period 0; and second, Mr. Beevers's assumption that each bank's directionality must be independent of all other banks' directionalities is not only unsupported, but demonstrably false.

[59] We reject out of hand Exchange plaintiffs' suggestion that a model or statistical technique that is accepted and reliable in one context should be considered reliable and admissible in all contexts. (Exch. Pls.' Beevers Opp'n 21.)

Mr. Beevers does not identify the time period over which he draws his initial distribution of each bank's submissions compared to the reference rate. However, counsel at oral argument clarified that Mr. Beevers conducted his analysis over Period 0 (Hr'g Tr. 17:9-13), and this representation is consistent with Mr. Beevers's use, for almost all banks and tenors analyzed, of 666 daily observations.[60] Mr. Beevers's reliance on Period 0 -- a period in which Exchange plaintiffs allege trader-based manipulation to be especially prevalent -- as a benchmark period for his distributions undermines the reliability of the analysis. In the same way that regressions relying on clean periods overlapping with challenged conduct may be unreliable because the relationships between variables measured during the "clean" period will be tainted by the challenged conduct, the distributions underlying Mr. Beevers's calculations are not in fact "clean."

Additionally, Mr. Beevers's central assumption in running his Monte Carlo analysis -- the statistical independence of each bank's directionality -- is untenable. First, macroeconomic effects are likely to affect different subsets of panel banks differently. Mr. Beevers asserts that macroeconomic factors "impact all banks equally," but this assertion is difficult to accept given geographic differences between panel banks, among other

[60] Based on a year having approximately 252 trading days, 666 days corresponds roughly to the 2.64-year length of Period 0.

distinctions. (Beevers Rebuttal Report ¶ 112.) The contention, for example, that European monetary policy would affect Rabobank, Bank of America, and Bank of Tokyo-Mitsubishi to the same extent is simply not credible. To the extent Mr. Beevers tautologically defines "macroeconomic" factors to be those that impact all banks equally and all other factors are "micro economic effects," (Beevers Rebuttal Report ¶ 112), this definition undermines Mr. Beevers's decision to account only for credit risk in his submission analysis (Beevers Initial Report ¶¶ 103-10).

But even disregarding macroeconomic effects, Mr. Beevers's independence assumption is false as a matter of mathematical logic because each of his reference rates is itself a function of each bank's LIBOR submissions. That is, one bank's directionality is necessarily related to all other bank's directionalities through the reference rate itself, and therefore cannot be independent to the extent Mr. Beevers assumes.

When published LIBOR is the reference rate, the directionalities cannot be completely independent because they are constrained by the method by which published LIBOR is calculated. To take an extreme example, a result that all 16 banks' submissions were below published LIBOR (i.e., had negative directionality) is impossible in actuality but a possible result under Mr. Beevers's independence assumption. Nor must all impossible results be so extreme: for example, a result that 4 banks had positive

directionality and 12 banks had negative directionality is also impossible, because those four banks with the highest submissions would be "trimmed" as being outside the interquartile range and the remaining 12 banks cannot all have made LIBOR submissions below published LIBOR. Similarly, when the modal submission is the reference rate, the directionalities cannot be completely independent because they are constrained by the fact that the mode must have been generated by a certain number of bank's submissions being the same. To take another example, a result that fewer than two banks' submissions was equal to the modal submission (i.e., had no directionality) is impossible, as that value could not be the reference rate because it would not be the mode.

In sum, even assuming that Mr. Beevers's Monte Carlo analysis can overcome a fundamental relevance problem at this stage, we are unpersuaded that Mr. Beevers has implemented his Monte Carlo analysis in a robust way that supports his conclusion of collusion.

1.3.4. Continuity of Manipulation

Finally, Mr. Beevers opines that "it will feasible to prepare a matrix of a chronological listing of each day of trader based manipulation by each Defendant," and that such a matrix will "potentially likely contain thousands of instances of trader based manipulation by many of the Defendants." (Beevers Initial Report ¶ 117.) This compound opinion encompasses two distinct opinions: (1) that a "matrix" listing instances of trader-based manipulation

can be assembled, and (2) that panel banks "potentially likely" engaged in thousands of instances of trader-based manipulation.

We agree with plaintiffs that the first part of this opinion is "straightforward" (Exch. Pls.' Beevers Opp'n 21-22), a quality that weighs not in favor of, but against, admissibility. Mr. Beevers's opinion here appears to be that once discovered (through review of trader communications, statistical analysis, or some other method), all instances of trader-based manipulation can be compiled into a single table with one direction corresponding to each panel bank and the other corresponding to days. The rather obvious statement is not helpful to the trier of fact and is not the product of Mr. Beevers's expertise.

The second part of this opinion is more substantive. Mr. Beevers opines that panel banks "potentially likely" engaged in thousands of instances of trader-based manipulation, basing this opinion on allegations in Exchange plaintiffs' complaint quoting statements of facts incorporated into certain settlements between panel banks and regulatory authorities, his interpretation of the trial testimony of Rabobank trader Lee Stewart, and an analysis of Deutsche Bank's trading positions. (Beevers Initial Report ¶¶ 118-30.) As a general matter, these opinions are irrelevant and unhelpful to the trier of fact at this stage. The operative question at class certification is not how many times defendants engaged in trader-based manipulation in total -- a point that

Exchange plaintiffs have repeatedly stressed, and Mr. Beevers's attempt to quantify, however imprecisely, an upper bound on trader-based liability simply has no bearing on the class certification analysis.

Further, Mr. Beevers's recitation of complaint allegations and interpretation of trial testimony and trader communications is not based on his specialized knowledge. Much of this section is devoted to canvassing the documentary evidence for words suggesting frequency, such as "weekly," "regularly," and "common." (Beevers Initial Report ¶¶ 118-19, 124.) Absent some suggestion that these words have special or coded meaning in this context of trader communications, this exercise is readily performable by the trier of fact and does not require Mr. Beevers's expertise. Mr. Beevers also reviews two settlements between panel banks and regulatory authorities for evidence that trader-based manipulation sometimes occurred orally and would not be documented, a task that is again performable by the factfinder.

Next, Mr. Beevers opines that the "steepness" of the yield curve implied by Deutsche Bank's 1-month and 3-month LIBOR submissions suggests that "Deutsche Bank was intentionally misreporting its LIBOR during this period" in order to systematically benefit its trading positions between January 2008 and September 2008, and that this manipulation is unlikely to be

corroborated with documentary evidence.[61] (Beevers Initial report ¶¶ 125-29.) Mr. Beevers, however, does not articulate the relevance of this analysis of "steepness" in Deutsche Bank's submissions outside of Period 0 to trader-based manipulation by Rabobank.

1.3.5. Conclusion

Rabobank's motion to exclude Mr. Beevers's opinions is granted in part and denied in part. Though Mr. Beevers may opine on trade reporting and risk reporting systems in the financial industry as a general matter, he may not offer opinions regarding what specific data Rabobank possesses or opinions as to whether certain data should have been produced. Mr. Beevers lacks a basis on which to opine on Rabobank-specific data issues. His related opinions, regarding whether Rabobank's data productions meet his standards for completeness, are speculative and infringe on our role in establishing the scope of necessary discovery.

Further, his methodology for identifying trader-based manipulation is not reliable: it proceeds from an unreliable first step, as demonstrated by the implausible results it produces when applied to other time periods and data series, and compounds any unreliability with further unreliable steps. His Monte Carlo

[61] Mr. Beevers's opinion here, that many instances of trader-based manipulation would not be reflected in a written record because they involved in-person requests, significantly undermines Dr. Seyhun's reliance on documentary evidence of trader-based manipulation in his Rebuttal Period 0 Model. (E.g., Seyhun Initial Report ¶ 89; Exch. Pls.' Seyhun Opp'n 12-13, 17-18.)

analysis is both unhelpful, as it is incapable of identifying trader-based manipulation with any specificity, and unreliable, as it depends on several assumptions that range between questionable and demonstrably false. And finally, his opinion regarding continuity of manipulation is not a product of his expertise and irrelevant as to Rabobank.

1.4. Mr. Miller

Exchange plaintiffs offer a declaration from Mr. Eric Miller (the "Miller Declaration") dated May 2, 2017 (Decl. of Thomas Elrod ex. 13, July 21, 2017, ECF No. 2121), setting forth Mr. Miller's opinions "regarding what information is available to identify members of the putative Exchange-Based class in this action and how the identification process could work." (Miller Decl. ¶ 2.) In particular, Mr. Miller opines: (1) that EDF traders who transacted during the Class Period could be efficiently notified through a certain process; (2) that the Chicago Mercantile Exchange (CME) maintains a "street book" of transaction data that could be used to fill gaps in data from other sources; (3) that his class action administration firm, A.B. Data, Ltd., has the capacity to process claims forms and perform damages calculations pursuant to a methodology to be ordered by the Court; and (4) that named plaintiff Atlantic Trading held certain trading positions on EDF contracts settling in December 2007. Based on Mr. Miller's

experience in the administration of class action settlements,[62] we conclude that he is generally qualified to offer these opinions.

Mr. Miller first opines that class members could be identified through a notice program involving (1) the collection of "the names and addresses of all 'Large Traders' that cleared trades" in EDFs; (2) the collection of "the names and addresses of all clearing Futures Commission Merchants" (FCMs); (3) the collection of "additional names and addresses of potential settlement class members from banks, brokers, and other nominees"; (4) the conducting of a print and electronic media campaign; and (5) the establishment of a website and telephone hotline. (Miller Decl. ¶¶ 5-14 (footnotes omitted).) Potential class members identified by name and address would be sent a "Notice Packet" consisting of "the Court-Approved Notice of Class Action, Claim Form, and other documents." (Miller Decl. ¶ 6.)

Implicitly assuming that the individuals and entities identified through this process -- Large Traders, FCMs, and class members otherwise receiving notice -- maintained some records, Mr. Miller suggests that the CME retains records in the form of a "Street Book" sufficient to "fill[] gaps" in those records. (Miller Decl. ¶ 15.) Mr. Miller concludes that, to the extent that potential class members have not "retained the records

[62] Mr. Miller is a vice president of A.B. Data has participated in the administration of numerous class-action settlements. (Miller Decl. ¶¶ 1, 3.)

necessary to perfect a claim," the CME's Street Book contains "records of the historical daily activity of all transactions for futures and options contracts" that could be used to determine each class member's transactions. (Miller Decl. ¶¶ 15-16.)

Mr. Miller's opinion regarding the gap-filling "Street Book" rests on a speculative assumption and is inadmissible. Mr. Miller does not claim to have personal experience with data produced by the CME, but bases his opinions on his "experience in past and current cases," including In re Amaranth Natural Gas Commodities Litigation, No. 07 Civ. 6377 (SAS) (S.D.N.Y.) and In re Optiver Commodities Litigation, No. 08 Civ. 6842 (LAP) (S.D.N.Y.). But Amaranth and Optiver each involved records maintained by the New York Mercantile Exchange and not the CME, see In re Amaranth Nat'l Gas Commodities Litig., 587 F. Supp. 2d 513, 519 (S.D.N.Y. 2008), aff'd, 730 F.3d 170, 172 (2d Cir. 2013); Compl. ¶ 1, In re Optiver Commodities Litig., (S.D.N.Y. filed July 30, 2008), No. 08 Civ. 6842 ECF No. 1, a distinction that Mr. Miller ultimately acknowledged at his deposition, (Miller Dep. 122:21-128:20, Decl. of Robert Lindholm ex. 74, July 7, 2017, ECF No. 2061). In the absence of additional support for his opinion regarding a CME "Street Book," this opinion in unreliable.

Exchange plaintiffs attempt to bolster Mr. Miller's opinion by asserting that they had served a subpoena on the CME to produce street book data, but CME was "instructed not to produce street

book data" at the class certification stage. (Exch. Pls.' Miller Opp'n 17.) Implicit in this argument is the suggestion that the CME might very well have street book data, and whether that data exists is simply unknown at the moment because the CME has not been required to respond to the subpoena. We find this argument unpersuasive: Mr. Miller is not entitled to base his affirmative opinion, that CME in fact maintains street book data, on mere uncertainty as to whether such data exists.

Further, the gap-filling purpose of "street book" data is implicated only if some base of (gap-containing) data exists in the first place. While Mr. Miller opines that identified EDF traders could "provide historical transaction data in hard copy and/or electronically," he never states whether the EDF traders identified through the various methods of notice have maintained records at all.[63] Without that critical link, Mr. Miller's opinions on how best to provide notice to EDF traders -- necessary after certification of a class (particularly in the settlement context[64]), see Fed. R. Civ. P. 23(c)(2)(B), (e)(1), are irrelevant.

While the parties dispute the import of the Second Circuit's decision in In re Petrobras, the availability of trading records

[63] Indeed, as counsel conceded at oral argument, Exchange plaintiffs have served 89 subpoenas on various FCMs, and have received no data in response. (Hr'g Tr. 9:22-25; 11:14-24.)

[64] Mr. Miller's declaration refers to "settlement" several times. (Miller Decl. ¶¶ 5, 9, 19.) We are, of course, considering whether a litigation class should be certified.

is an issue relevant to our consideration of the predominance of common questions and the superiority of class-action status. Mr. Miller's notice opinions do not address whether EDF traders, having received notice, actually possess relevant records. The subject that his notice opinions do address -- the mechanics of the notice process -- are of minimal relevance and do not help us determine a fact in issue. Nor can Mr. Miller's street book opinions salvage his notice opinions, given the speculative nature of the former.

Mr. Miller additionally opines A.B. Data has the capability to process claims "precisely in accordance with the court-approved plan of allocation and settlement stipulation," describes certain features of A.B. Data's proprietary software, and concludes that A.B. Data can handle "large volumes of complex damage calculations." (Miller Decl. ¶¶ 19-26.) We have no particular reason to doubt that A.B. Data has the technological capability to process trading records and perform damages calculations on those records as a general matter. But in order for A.B. Data to do so, those trading records must exist as an initial matter, and Mr. Miller does not reliably opine that they do.[65]

Finally, Mr. Miller provides several statistics regarding named plaintiff Atlantic Trading's positions on the EDF contract expiring in December 2007. (Miller Decl. ¶ 27.) However, Mr.

[65] Mr. Miller also lacks personal knowledge as to the existence and retention of these trading records.

Miller does not explain the data that he analyzed, the method he applied, or the assumptions that he made in making those calculations. This opinion is therefore also inadmissible.[66]

Accordingly, Rabobank's motion to exclude Mr. Miller's declaration is granted. Mr. Miller's opinions regarding the availability of a CME "street book" are not only speculative, but also concededly incorrect. His opinions regarding the provision of notice to EDF traders are of minimal relevance and do not help us "determine a fact in issue." Fed. R. Evid. 702(a). Given the lack of context for his trading-position calculations, we also cannot conclude that those statistics are sufficiently reliable to be admissible.

2. Exchange Plaintiffs' Daubert Motions

2.1. Dr. Culp

Rabobank submitted two expert reports from Dr. Christopher L. Culp: (1) an initial report dated April 3, 2017 (Decl. of Robert Lindholm ex. 67, June 30, 2017, ECF No. 2027); and (2) a sur-rebuttal report dated June 30, 2017 (Decl. of Robert Lindholm ex. 68, June 30, 2017, ECF No. 2027). We refer to these as the Culp Initial Report and the Culp Rebuttal Report. Exchange plaintiffs

[66] Additionally, following Bank of America and JPMorgan Chase's settlements with Exchange plaintiffs, no live antitrust claims remain in this action. Though Mr. Miller offers this opinion divorced from context, it appears to be offered to support Atlantic Trading's standing to assert antitrust claims corresponding to subpart A of the class definition. Because no antitrust claims remain, this opinion has likely been rendered irrelevant.

seek to exclude the portions of Dr. Culp's reports in which he opines that changes in LIBOR do not necessarily cause changes in EDF prices.[67] (Exch. Pls.' Culp Mem. 1) They do not challenge Dr. Culp's qualifications to offer those opinions and we conclude that Dr. Culp is amply qualified to offer them.[68]

Exchange plaintiffs contend that Dr. Culp's opinions should be excluded for five reasons: (1) they are allegedly contradicted by a document published by the Chicago Mercantile Exchange; (2) they are allegedly contradicted by statements made by Robert Wise, counsel for defendant Bank of America, during a March 2013 oral argument; (3) they fail to address the "overlap" theory briefly discussed in the Seyhun Rebuttal Report and more fully developed in Exchange plaintiffs' motion papers; (4) they are contradicted by certain trader communications; and (5) they are based on unreliable empirical analyses.[69]

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[67] Specifically, Exchange plaintiffs seek to exclude the following paragraphs of Dr. Culp's reports: paragraphs 16 through 37, 40, 92 through 111, 187 through 222, 271 through 278, 349, and 352 through 364 of the Culp Initial Report and paragraphs 5, 6, 8 through 12, 20 through 22, 25 through 28, and 51 through 56 of the Culp Rebuttal Report. (Exch. Pls.' Culp Mem. 1.)

[68] Dr. Culp serves as an adjunct professor at both the Swiss Finance Institute and the University of Bern and holds a Ph.D. in financial economics from the University of Chicago Booth School of Business and a B.A. in economics from the Johns Hopkins University. He has also conducted extensive research and written numerous papers on various finance topics. (Culp Initial Report app. F.)

[69] The first four of these critiques can also be rejected at the threshold as critiques going to the weight of Dr. Culp's opinions rather than their admissibility. These critiques do not seriously challenge Dr. Culp's theoretical reasoning or empirical methodology; they at most offer competing evidence to be weighed in the Rule 23 analysis.

Before analyzing these specific challenges, we first consider the proper interpretation of Dr. Culp's opinions. Exchange plaintiffs assert that Dr. Culp opines that there is "no mathematical relationship between spot LIBOR and expected future spot LIBOR," (Exch. Pls.' Culp Mem. 7), but this is a mischaracterization. Rather, Dr. Culp explains that changes in LIBOR do not necessarily cause changes in EDF prices. (Culp Initial Report ¶ 19 (criticizing Dr. Seyhun's and Dr. Netz's assumption that "changes in current 3mLIBOR impact Eurodollar futures prices . . . on days before futures contracts expire"); ¶ 21 ("[C]hanges in LIBOR do not have an independent causal effect on Eurodollar futures prices."); ¶ 24 ("[Dr. Seyhun and Dr. Netz] do not have a reliable theoretical basis for their assumption that changes in LIBOR on a given day cause changes in Eurodollar futures prices."). This difference parallels the distinction between correlation and causation: correlation between LIBOR and EDF prices is sufficient to establish a "mathematical relationship" between the two, but the operative question is whether changes in LIBOR cause determinable changes in EDF prices. With this understanding in mind, we consider Exchange plaintiffs' specific arguments.

First, Exchange plaintiffs contend that Dr. Culp's opinion is "patently incorrect" because it is contradicted by a CME

publication[70] discussing implied forward rates and providing a formula for the calculation of implied forward rates. (Exch. Pls.' Culp Mem. 7-8). We reject at the start Exchange plaintiffs' arguments to the extent they suggest that Dr. Culp ignored this publication, as he explicitly considered this publication in his evaluation of Dr. Netz's report. (Culp Initial Report ¶ 41 n.103). Further, based on our review of the publication, it discusses the relationship between "Eurodollar (Euro) futures and cash markets" rather than EDFs and LIBOR, which is not itself a cash market. This publication does not render Dr. Culp's causation opinion fatally flawed.

Second, Exchange plaintiffs assert that counsel for defendant Bank of America stated at oral argument in 2013 that "[e]ssentially what people are doing there is making bets, if you will. . . . [B]ut they're taking a position with respect to where LIBOR is going, up or down." (Exch. Pls.' Culp Mem. 8 & n.4 (citing Mar. 5, 2013 Hr'g Tr. 25:25-26:4, ECF No. 325)). We reject the notion that this remark from counsel made during oral argument almost five years ago seriously calls into the question of a qualified expert witness. Indeed, counsel prefaced his statement with the remark that "I'm not an expert in futures contracts and the Chicago Exchange." (Mar. 5, 2013 Hr'g Tr. 25:24-25.) And even if we did

[70] John W. Labuszewski, Understanding Eurodollar Futures, CME Group Inc. (2013).

not reject the notion, counsel's statement was immediately preceded by plaintiffs' counsel's statement that EDF contracts settled at a price of 100 minus LIBOR (Mar. 5, 2013 Hr'g Tr. 25:16-20); nothing in the statement by counsel for Bank of America supports the notion that changes in LIBOR cause changes in EDF prices before the settlement date.

Third, Exchange plaintiffs argue that Dr. Culp failed to take into account their "overlap" theory. Under this theory, on a given day, the relationship between spot LIBOR and expected spot LIBOR at settlement is a function of the "overlap" between the three-month period following that day and the three-month period following the settlement date. (Exch. Pls.' Culp Mem. 10-13; Exch. Pls.' Culp Reply 3-5.) Using the specific example of March 14, 2008 and an EDF contract settling on March 18, 2008, Exchange plaintiffs assert that expected 3-month LIBOR on March 18, 2008 must be a function of spot 3-month LIBOR on March 14, 2008, because the former 3-month rate covers a period between March 18, 2008 and June 17, 2008 and the latter 3-month rate covers a period between March 14, 2008 and June 12, 2008 -- an overlap of 87 days out of 91 days in the period. Therefore, they contend, the March 14, 2008 expectation of 3-month LIBOR on March 18, 2008 can be calculated as the weighted average of 3-month spot LIBOR on March 14, 2008 (with 95.6% weight, calculated as 87 divided by 91) and the 3-month implied forward rate calculated from spot 3-month LIBOR

and spot 6-month LIBOR on March 14, 2008 (with 4.4% weight, calculated as 4 divided by 91). According to Exchange plaintiffs, Dr. Culp's failure to consider this "mathematical fact" renders his challenged opinions inadmissible. (Exch. Pls.' Culp Mem. 12.)

As a threshold matter, the criticism that Dr. Culp did not consider the weighted-average formula presented for the first time in Exchange plaintiffs' motions papers (Exch. Pls.' Culp Reply 5) -- but not in Dr. Seyhun's reports -- is mystifying. Exchange plaintiffs cannot credibly fault Dr. Culp for failing to address a novel formula never presented until after his reports were written: Exchange plaintiffs' motion was filed on July 10, 2017, more than three months after Dr. Culp's initial report (dated April 3, 2017) and ten days after his sur-rebuttal report (dated June 30, 2017).

In any event, Exchange plaintiffs' "overlap" formula fares no better on the merits. While the validity of the implied forward rate formula incorporated as an input into the weighted-average formula is not questioned,[71] they appear to have conjured the weighted-average formula from absolutely nothing.[72] Indeed, as we

[71] For any two times in the future, *t1* and *t2*, the implied forward rate formula calculates the spot rate expected at time *t1* covering the time period between time *t1* and time *t2*. Taking three months and six months as an example, the three-month spot rate expected in three months may be derived from the currently observed three-month rate spot and currently observed six-month spot rate.

[72] While Dr. Seyhun offers the overlap theory in his rebuttal report (Seyhun Rebuttal Report ¶¶ 38-50), he never reduces the overlap theory into the weighted-average formula offered by Exchange plaintiffs in their challenge to Dr. Culp.

will explain, it rests on the unfounded assumption that a market participant attaches equal significance to each day over a given three-month period and maintains an unchanging expectation of relevant conditions during that three-month period.

Taking Exchange plaintiffs' 2008 exemplar dates, the period supposedly reflected in spot 3-month LIBOR on March 14 covers the period between March 14 and June 12, and this period is divisible into two periods: (1) the four days between March 14 and March 17 (which do not overlap with the three-month period reflected in spot 3-month LIBOR on March 18), and (2) the 87 days between March 18 and June 12 (which do overlap with the three-month period reflected in spot 3-month LIBOR on March 18). Exchange plaintiffs appear to acknowledge that the first, non-overlapping period captured in spot 3-month LIBOR on March 14 should be excluded from the determination of expected 3-month spot LIBOR on March 18, but the formula's means of excluding those dates is to reduce the weight attributable to spot 3-month LIBOR on March 14 proportionally by the number of days. But this proportional reduction is appropriate only if the expectations for the first, non-overlapping period and expectations for the second, overlapping period are themselves proportional to the number of days. Because Exchange plaintiffs similarly rely on a proportional reduction of the 3-month implied forward rate (calculated from 3-month and 6-month spot LIBOR) to exclude the non-overlapping

portion of the latter period, the same proportionality and uniformity are required of the 3-month period covered by the implied forward rate.

This March 14 and March 18 example establishes Exchange plaintiffs' reliance on proportionality for dates that are four days apart, but this principle generalizes to any combination of days. For example, Exchange plaintiffs' formula for spot 3-month LIBOR on March 18 expected as of March 13 would apply a 94.5% weighting (86 divided by 91) to spot 3-month LIBOR on March 13, which assumes that expectations for the five-day non-overlapping period are proportional to those for the 86-day overlapping period. Similarly, the 5.5% weighting applied to the 3-month implied forward rate assumes that expectations for the five-day overlapping period are proportional to those for the 86-day nonoverlapping period. And more generally, for all *n* between 0 and 91, Exchange plaintiffs' weighted-average formula requires proportionality between the first *n* days and the remaining 91 minus *n* days; the formula therefore assumes "uniformity" across all days in the 3-month period because each additional day in the overlapping period must account for 1/91 of expectations. This assumption is dubious at best, given that some days are more likely to have significant macroeconomic information impacting LIBOR (as Dr. Seyhun, Dr. Netz, and Exchange plaintiffs concede occurs): the Federal Reserve could announce a rate change, or certain government

statistical releases regarding the state of the economy could be published, among many other events of significance.

In sum, Exchange plaintiffs' casual empiricism is entirely unavailing. We have significant doubts regarding the weighted-average formula proposed for the first time in Exchange plaintiffs' motion papers, and it certainly does not offer a basis on which to exclude Dr. Culp's opinions.

Fourth, plaintiffs assert that three communications between traders establish that changes in LIBOR caused changes in EDF prices, contradicting Dr. Culp's causation opinion. In particular, they rely on communications in which traders stated (1) "higher libor caused Sep09 and Dec09 ED to sell-off"; (2) "libors appear only relevant for futures"; and (3) "[t]he front 2 contracts in Eurodollars which most closely track the LIBOR settings have gotten killed this morning[] as the expectation is libors will set higher out of fear." (Exch. Pls.' Culp Mem. 8 n.3, Exch. Pls.' Culp Reply 6-7.) For one, these communications reflect only the beliefs of those traders, rather than the behavior of the market as a whole, and as Rabobank correctly notes, other traders (including several of the named plaintiffs in this action) viewed LIBOR as irrelevant in their trading considerations. Exchange plaintiffs offer no reason why, in assessing the reliability of Dr. Culp's opinions, we should give more weight to these three identified statements as compared to the named

plaintiffs' sworn deposition testimony. The fact that some traders considered LIBOR in making their trading decisions does not establish that changes in LIBOR cause determinable changes in EDF prices, a distinction that Exchange plaintiffs attempt to elide. (Exch. Pls.' Culp Reply 7.)[73]

Finally, in their reply brief, Exchange plaintiffs offer two critiques of Dr. Culp's empirical methodology: (1) that he improperly analyzed changes in EDF prices in a one-hour window surrounding publication of LIBOR, from 11:30 a.m. to 12:30 p.m. London time, and (2) that his analysis of the relationship between LIBOR-derived implied forward rates and EDF-implied rates is irrelevant. (Exch. Pls.' Culp Reply 8-10.) Because Exchange plaintiffs do not seek exclusion of these analyses,[74] we discuss them and Exchange plaintiffs' criticisms only briefly.[75]

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[73] Further, these documents are susceptible to interpretation at best. For example, the third communication appears to reference EDF trading based on expectations of LIBOR in advance of its publication. This interpretation would be consistent with Rabobank's argument -- and Dr. Seyhun, Dr. Netz, and Exchange plaintiffs' concessions -- that EDF prices incorporate significant macroeconomic information that is also incorporated into LIBOR, as that information guides "expectations" of LIBOR.

[74] The analysis of changes in EDF prices surrounding the publication of LIBOR is presented at paragraphs 116 through 169 of the Culp Initial Report and the analysis of the relationship between LIBOR-derived implied forward rates and EDF-implied rates is presented at paragraphs 45 through 51 of the Culp Rebuttal Report. Exchange plaintiffs do not include these paragraphs in the list of sections they seek to exclude. (Exch. Pls.' Culp Mem. 1.)

[75] Exchange plaintiffs also contend that these analyses are "ultimately irrelevant." (Exch. Pls.' Culp Reply 10.) This suggestion is baffling, given that Exchange plaintiffs' experts -- and Exchange plaintiffs themselves -- expound extensively on the significance of implied forward rates and arbitrage in establishing a causal relationship between LIBOR and EDF prices. (Seyhun Initial Report ¶¶ 108-09; Netz Initial Report 32-33; Netz Rebuttal Report 15-16; Exch. Pls.' Culp Mem. 7-9; Exch. Pls.' Culp Reply 3-4.)

In his analysis of changes in EDF prices surrounding the publication of LIBOR, Dr. Culp finds that EDF trading prices respond quickly to significant macroeconomic events. (E.g., Culp Initial Report ¶ 121.) Dr. Culp's focus on the publication of LIBOR itself, as a means of isolating changes in EDF prices attributable to LIBOR apart from changes in EDF prices attributable to macroeconomic events would therefore appear to be a feature, not a flaw, of his analysis. Exchange plaintiffs' reliance on Dr. Seyhun's speculative "insider trading" theory is unpersuasive, and their suggestion that the EDF market may not be sufficiently liquid around 11:30am London time (or 5:30am Chicago time) is difficult to reconcile with their (and Dr. Seyhun's) contrary suggestions that EDFs "trade on an efficient market." (Exch. Pls.' Culp Reply 8; Seyhun Rebuttal Report ¶ 126.)

In his analysis of the relationship between LIBOR-derived implied forward rates and EDF-implied rates, Dr. Culp concludes that the two rates substantially differ over the Class Period. (E.g., Culp Rebuttal Report ¶ 49.) Because the spread between the two rates ranges between negative 157.56 and 21.79 basis points over the class period, Dr. Culp concludes that these differences are substantially greater in magnitude than the maximum 0.125 basis point change in LIBOR attributable to Rabobank's alleged

manipulation of LIBOR.[76] (Culp Rebuttal Report ¶¶ 48-50.) Exchange plaintiffs complain that Dr. Culp fails to take into account the fact that banks other than Rabobank may have engaged in manipulation, and the collective impact of manipulation by multiple banks could be "more than ten-fold" greater than the 0.125 bp maximum change attributable to Rabobank. (Exch. Pls.' Culp Reply 10.) But even accepting that manipulation by more than one bank will have a greater impact on published LIBOR, Dr. Culp's point still stands: the large spreads between LIBOR-derived implied forward rates and EDF-implied rates often could not be explained by alleged LIBOR manipulation even by more than one bank. For example, the most extreme positive and negative spreads, at 21.79 bp and negative 157.56 bp, are 174 times and 1,260 times greater than the maximum Rabobank impact of 0.125 bp, respectively.

Exchange plaintiffs' motion to exclude certain of Dr. Culp's opinions is therefore denied. Even accepting that Exchange plaintiffs' criticisms are anything more than attacks on Dr. Culp's conclusions premised on a mischaracterization of his reports, none of those critiques call into question the reliability of Dr. Culp's opinions. Dr. Culp's opinions are not contradicted by a CME publication discussing Eurodollar cash markets, a statement made by counsel for Bank of America during oral argument, or certain

[76] Dr. Culp relies on Dr. Hubbard's calculations that Rabobank's alleged manipulation of LIBOR had a maximum impact of 0.125 basis points. (Culp Initial Report ¶¶ 221-22; Hubbard Initial Report ¶ 216.)

trader communications. Nor are they excludable for having failed to consider the "overlap" formula that Exchange plaintiffs alchemize from nothing and present for the first time in their motions papers. And ultimately, we reject Exchange plaintiffs' overarching theory that a logical or theoretical argument is not susceptible to rebuttal or disproof through empirical evidence. We would assume that empirical evidence running counter to a logical or theoretical argument would spur one to ensure that the argument is free of logical fallacies and reevaluate the theoretical basis for the argument. But even if not, Exchange plaintiffs' attempted distinction of "logical" and "theoretical" arguments on the one hand and "empirical" arguments on the other simply does not offer a basis for excluding Dr. Culp's opinions under Daubert.

2.2. Dr. Hubbard

Rabobank offers two reports from Dr. R. Glenn Hubbard: (1) an initial report dated April 3, 2017 (Decl. of Robert Lindholm ex. 65, June 30, 2017, ECF No. 2027); and (2) a sur-rebuttal report dated June 30, 2017 (Decl. of Robert Lindholm ex. 66, June 30, 2017, ECF No. 2027). We refer to these as the Hubbard Initial Report and the Hubbard Rebuttal Report. Exchange plaintiffs seek to exclude only certain portions of Dr. Hubbard's opinions, those

in which he addresses Mr. Beevers's opinions regarding certain data produced by Rabobank and the sufficiency of that data.[77]

Specifically, Dr. Hubbard opines that Mr. Beevers's data-sufficiency critiques are misguided because: (1) Mr. Beevers constructed a dataset with duplicate entries (Hubbard Initial Report ¶¶ 174-76); (2) the date-coding issues identified by Mr. Beevers are illusory (Hubbard Initial Report ¶¶ 177-80); (3) information attributing trading "folders" to the individual trader with responsibility for that "folder" was made available for each of the traders identified over the course of Mr. Beevers's review of trader communications; and (4) Mr. Beevers did not consider certain risk reports produced by Rabobank (Hubbard Initial Report ¶¶ 181-85).

Dr. Hubbard is qualified to offer the challenged opinions.[78] Dr. Hubbard, in the challenged sections of his report, does not opine that Rabobank's data productions were complete and contain all information necessary to identify trader-based manipulation, but rather that they are not deficient in the various ways suggested by Mr. Beevers. Accordingly, Dr. Hubbard does not need

[77] Exchange plaintiffs seek the exclusion of paragraphs 17(b), 32 through 34, 164, 171, and 174 through 185 of the Hubbard Initial Report and Appendix D of that report. (Exch. Pls.' Hubbard Mem. 1.)

[78] Dr. Hubbard serves as Dean and Russell L. Carson Professor of Economics and Finance at the Columbia Graduate School of Business and on the Federal Reserve Bank of New York's Panel of Economic Advisors. Dr. Hubbard holds a Ph.D. and an A.M. in Economics from Harvard University, and has written extensively on various topics in finance and economics. (Hubbard Initial Report app. A.)

an "understanding of, and experience with, the day-to-day conduct and reporting in dealing rooms of financial services organizations" to offer these opinions (Exch. Pls.' Hubbard Mem. 8); rather, Dr. Hubbard's formal training in economics and his extensive experience working with economic and financial data qualify him to do so. Exchange plaintiffs' suggestions to the contrary mischaracterize the opinions in question and are unpersuasive.

First, citing Dr. Hubbard's statement that "Mr. Beevers' own errors -- not deficient data -- are the cause of many of the data deficiencies he mistakenly claims exist in the Rabobank data" (Hubbard Initial Report ¶ 17b), Exchange plaintiffs claim that "[i]t is hard to imagine how this statement could mean anything other than what it says; namely, that it is Dr. Hubbard's opinion that Rabobank's data productions are 'not deficient,' and that Mr. Beevers' opinion that they are deficient, is 'mistaken[].'" (Exch. Pls.' Hubbard Reply 4.)

We have no such difficulty. Dr. Hubbard's statement is clear: he opines that <u>many of</u> the data deficiencies identified by Mr. Beevers are attributable to Mr. Beevers's own errors and not deficiencies in Rabobank's data. Exchange plaintiffs' interpretation overreads Dr. Hubbard's opinion, which pertains to the deficiencies identified by Mr. Beevers and is not a representation regarding the quality of Rabobank's data generally.

Indeed, such an interpretation is expressly contradicted by Dr. Hubbard's qualification that "many of" the deficiencies identified by Mr. Beevers are not deficiencies in actuality.[79]

Exchange plaintiffs also identify subsequent portions of Dr. Hubbard's report and deposition testimony regarding the presence of inconsistent date formats, the availability of "folder mapping" information[80] for specific traders identified in Mr. Beevers's report, and the sufficiency of certain risk reports. Again, Dr. Hubbard limits each of these statements to be a response to Mr. Beevers's opinions, and these statements cannot reasonably be read to offer an opinion regarding the overall completeness of Rabobank's production. For instance, Exchange plaintiffs identify Dr. Hubbard's opinion that inconsistent date formats "should not have contributed to [Mr. Beevers's] inability to construct trader-level LIBOR-related positions." (Exch. Pls.' Hubbard Reply 5 (quoting Hubbard Initial Report ¶ 179).) This opinion is limited, on its face, to one specific difficulty that Mr. Beevers identified in his report. Similarly, Exchange plaintiffs identify Dr. Hubbard's statement that folder mapping information is available "for every Rabobank trader that . . . Mr. Beevers identified as

[79] For the same reasons, Exchange plaintiffs' reliance on paragraph 174 of the Hubbard Initial Report, where Dr. Hubbard opines that "most of" the data deficiencies identified by Mr. Beevers are not actually deficiencies, is unavailing. (Hubbard Initial Report ¶ 174.)

[80] Broadly speaking, "folder mapping" refers to the ability to identify the individual trader responsible for specific trading positions and transactions.

being involved in trader communications." (Exch. Pls.' Hubbard Reply 5 (quoting Hubbard Initial Report ¶ 177 n.302).) But again, this statement is on its face limited to a certain group of traders specifically identified by Mr. Beevers and does not extend to the availability of folder mapping information for all traders more broadly. Finally, Exchange plaintiffs identify Dr. Hubbard's opinion that Rabobank produced "most of the risk reports" that Mr. Beevers asserts are missing, "namely, 'risk positions by trading book on a daily basis,' and reports of 'which activities or individuals are taking significant risk positions.'" (Exch. Pls.' Hubbard Reply 5 (quoting Hubbard Initial Report ¶ 185 and Beevers Initial Report ¶¶ 48-49).) This selective quotation mischaracterizes the scope of Dr. Hubbard's opinion, which refers only to Mr. Beevers's description of "routine periodic reports, sometimes called 'dashboards', for use in internal and regulatory reporting,'" (Hubbard Initial Report ¶ 184 (quoting Beevers Initial Report ¶ 31)), and not to trader-by-trader positions more broadly.

When the challenged opinions are characterized accurately, Dr. Hubbard is qualified to offer them. Dr. Hubbard's opinions are primarily directed to how Mr. Beevers analyzed the data, rather than what specific data Mr. Beevers analyzed. Accordingly, Dr. Hubbard's extensive training and experience in the fields of economics and finance renders him qualified to work with

spreadsheets and data, and therefore qualifies him to opine that Mr. Beevers made certain errors in analyzing the data produced by Rabobank.[81]

Nor are Dr. Hubbard's opinions excludable on account of incorrectness or speculativeness. Exchange plaintiffs suggest that Dr. Hubbard's opinions are not based on sufficient facts because Rabobank's data production contains "significant deficiencies . . . that are easily ascertained upon review," and Dr. Hubbard conceded that his opinions were incorrect. (Exch. Pls.' Hubbard Mem. 11-12). As a threshold matter, our role at the Daubert stage is not to conclusively assess the correctness of an expert's opinions, see Amorgianos, 303 F.3d at 266 (holding that we undertake a Daubert analysis "without regard to the conclusions the expert has reached or [our] belief as to the correctness of those conclusions"), a point that plaintiffs have repeatedly emphasized (e.g., Exch. Pls.' Seyhun Opp'n 10). Exchange plaintiffs' focus on the correctness of Dr. Hubbard's conclusions is therefore an analytic nonstarter. Further, we have already rejected the premise of the assertion that Dr. Hubbard's opinions are incorrect because Rabobank's data productions are in fact incomplete -- Dr. Hubbard does not opine on the overall

[81] This conclusion is consistent with our prior holding that Dr. Netz is qualified to opine on the relationship between LIBOR and EDF prices based on her training and experience in economics and econometrics, her lack of specific experience with EDFs and EDF trading notwithstanding.

completeness of Rabobank's data productions, but rather only certain deficiencies identified by Mr. Beevers.

Second, Dr. Hubbard's opinions are not speculative. Dr. Hubbard undertook a review of the work product supporting Mr. Beevers's report and of the data produced by Rabobank, (Hubbard Report app. C), and one can trace a direct analytical path from that review to the conclusions that Dr. Hubbard reaches: namely, that Mr. Beevers made certain errors in analyzing the data produced by Rabobank and failed to consider certain risk reports in formulating his opinions. Indeed, the Delta reports, the MRE reports, and the Daily Revenue and Risk reports identified at paragraph 185 of the Hubbard Initial Report[82] are not cited in the appendices listing the materials relied upon in Mr. Beevers's reports. (Beevers Initial Report app. A; Beevers Rebuttal Report app. A.). Proceeding from that fact to the conclusion that Mr. Beevers failed to take those reports into account is a natural inference, not an analytical leap suggesting a lack of reliability.

In sum, Exchange plaintiffs' motion to exclude certain of Dr. Hubbard's opinions is denied. The motion is premised on a mischaracterization of Dr. Hubbard's opinions: the disputed sections of his report do not offer, and cannot reasonably be read to offer, the opinion that Rabobank's data productions were

[82] Dr. Hubbard identifies specifically the documents located at Bates ranges RABO_METZLER_ 0188130-0189842, 0189843-0190724, and 0190725-0193254. (Hubbard Initial Report app. C.)

"complete" in some platonic sense. Based on his extensive training and experience in economics and finance, Dr. Hubbard is qualified to offer his opinions regarding Mr. Beevers's data analysis and any errors that Mr. Beevers may have made.

2.3. Dr. Willig

UBS submits two reports from Dr. Robert Willig: (1) an initial report dated April 3, 2017 (Decl. of Jamie Heine ex. 5, July 1, 2017, ECF No. 2031); and (2) a sur-rebuttal report dated June 30, 2017 (Decl. of Jamie Heine ex. 7, July 1, 2017, ECF No. 2031). In the context of the Exchange plaintiffs' action, we refer to these as the Willig Initial Report and the Willig Rebuttal Report. Exchange plaintiffs do not challenge Dr. Willig's qualifications, and we conclude that he is qualified to offer the opinions presented in his reports.[83]

In these reports, Dr. Willig offers several opinions as to "whether Plaintiffs can demonstrate using common proof on a class-wide basis that panel banks, either individually or jointly, systematically suppressed their LIBOR submissions and the resulting published LIBOR rates during the Suppression Class Period." (Willig Initial Report ¶ 5 (footnote omitted).) Central to these opinions is an analysis of interbank lending transactions

[83] Dr. Willig is a Professor Emeritus of Economics and Public Affairs at Princeton University, having served as a professor from July 1978 through June 2016. He holds a Ph.D. in Economics and an M.S. in Operations Research from Stanford University, and an A.B. in Mathematics from Harvard University, and his written extensively on topics in economics and finance. (Willig Initial Report app. 1.)

into which the panel banks actually entered, which Dr. Willig characterizes as "the most informative data for evaluating the accuracy of their LIBOR submissions." (Willig Initial Report ¶ 18.) Dr. Willig compiles a dataset of transactions from data files produced by the panel banks, and from this dataset identifies transactions between banks occurring in London, and matches each transaction in this dataset to a LIBOR submission by panel bank, tenor, and date. (Willig Initial Report ¶¶ 21-22, 30; app. 4.) Using this dataset, he concludes that "[c]ommon evidence cannot show that the panel banks' LIBOR submissions during the Suppression Class Period were systematically 'Low'," defining "Low" to mean below the "actual borrowing costs of the panel bank that made the submission" (Willig Initial Report ¶ 6(a)); that "[c]ommon evidence cannot show that any LIBOR suppression alleged by Plaintiffs was the result of the panel banks acting jointly" (Willig Initial Report ¶ 6(b)); and that "[c]ommon evidence cannot show that alleged suppression of LIBOR submissions caused LIBOR rates to be lower than they otherwise would have been" (Willig Initial Report ¶ 6(c)).

Exchange plaintiffs seek the exclusion of Dr. Willig's reports, though they focus their challenges on opinions based on Dr. Willig's analysis of transaction data.[84] They contend that Dr.

[84] Exchange plaintiffs do not specify that they challenge only certain parts of Dr. Willig's reports, but also offer no argument as to Dr. Willig's opinions that are not dependent on his analysis of transaction data.

Willig's analysis runs counter to the proper interpretation of the "LIBOR question" -- the question posed by the BBA that a panel bank is supposed to answer in making its LIBOR submission as well as certain guidance published by the BBA and certain panel banks' internal documents, among other authorities. They also assert that Dr. Willig's analysis is inadmissible because it relies on insufficient data, and because it offers an opinion on the merits.

2.3.1. Interpretation of the LIBOR Question

Exchange plaintiffs first argue that because Dr. Willig's analysis focuses on the rates observed in actual interbank lending transactions and not offered rates, his analysis contradicts the LIBOR question and is therefore unreliable and irrelevant. (Exch. Pls.' Willig Mem. 9-10.) They further assert that Dr. Willig's methodology is "guaranteed to produce Defendant-favorable false negatives," which "gives rise to a reasonable inference that Dr. Willig's first calculation set out to find only one Defendant-favorable result: no systematic suppression," and that Dr. Willig's methodology "completes Defendants' highly unusual and parallel violation of the BBA requirement of 'accountability' which was the original purpose of the offered rates." (Exch. Pls.' Willig Mem. 11-12.)

2.3.1.1. Exchange Plaintiffs' "Borrowing Cost" Allegations

This line of argument is readily refuted by Exchange plaintiffs' repeated references to panel banks' "borrowing costs"

throughout the course of this litigation -- or least up until interbank lending data was produced and analyzed by the parties' experts. Though Exchange plaintiffs have now amended their complaints to omit certain references to "borrowing costs," the Second Circuit has made clear that "[t]he amendment of a pleading does not make it any less an admission of the party," Andrews v. Metro N. Commuter R.R. Co., 882 F.2d 705, 707 (2d Cir. 1989). "[T]he facts alleged in a complaint . . . can be self-defeating." TufAmerica, Inc. v. Diamond, 968 F. Supp. 2d 588, 600 (S.D.N.Y. 2013), and in this case, Exchange plaintiffs' repeated allegations regarding "borrowing costs" is indeed self-defeating of their motion to exclude Dr. Willig's reports.

For example, in the first consolidated amended complaint, filed in April 2012, Exchange plaintiffs alleged that "Defendants conspired to suppress LIBOR below the levels it would have been set had Defendants accurately reported their borrowing costs to the BBA" and addressed "the striking discrepancy between Defendants' submissions to the BBA and their actual borrowing costs." (Consolidated Am. Compl. ¶¶ 45, 122, Apr. 30, 2012, ECF No. 134.) In a subsequent complaint, the corrected second amended consolidated class action complaint, Exchange plaintiffs asserted that "Defendants understated their borrowing costs to the British Bankers' Association," that "[b]y acting together and in concert to knowingly understate their true borrowing costs, Defendants

caused LIBOR to be set at artificial levels," and that "Defendants' LIBOR quotes during the Class Period did not appropriately reflect those banks' actual borrowing costs at that time." (Corrected Second Am. Consolidated Class Action Compl. ¶¶ 5, 13, 162, Sept. 30, 2013, ECF No. 438.) The proposed third amended complaint contains similar allegations, (Proposed Third Am. Consolidated Class Action Compl. ¶¶ 5, 13, 130, June 29, 2015, ECF No. 1159), as does the proposed fourth amended complaint (Proposed Fourth Am. Consolidated Class Action Compl. ¶¶ 5, 13, 131, Jan. 14, 2017, ECF No. 1726).

Exchange plaintiffs cannot now assert that Dr. Willig's analysis -- which performs a comparison that plaintiffs themselves have repeatedly alleged in their complaints and otherwise referenced -- is irrelevant or unreliable by changing their interpretation of the LIBOR question post hoc. As a corollary, the related insinuation that Dr. Willig's methodology is "guaranteed" to produce only defendant-favorable results borders on the frivolous.

Indeed, Exchange plaintiffs' attempt to evade the effect of their "borrowing costs" allegations is especially unpersuasive once the timing of Dr. Willig's reports is considered. In November 2016, in document requests made as part of class-certification discovery, Exchange plaintiffs defined "LIBOR Suppression" as "making LIBOR Submissions below the LIBOR Panel Bank's actual cost

of borrowing in the London Interbank Market." (Decl. of Paul Mishkin ex. 12, July 21, 2017, ECF No. 2112 ("Mishkin Willig Decl.").) In April 2017, when Dr. Willig's initial report was produced, both the operative complaint and the proposed fourth amended complaint submitted by Exchange plaintiffs in January 2017 contained numerous allegations regarding Defendants' "borrowing costs." (Corrected Second Am. Consolidated Class Action Compl. ¶¶ 5, 13, 162; Proposed Fourth Am. Consolidated Class Action Compl. ¶¶ 5, 13, 131.)

Only after we granted further leave to amend in April 2017 and Exchange plaintiffs in fact filed their corrected fourth amended complaint in December 2017 -- after the class certification motions and Daubert motions had been fully briefed -- did Exchange plaintiffs replace certain references to "borrowing costs" with "offered rates." For instance, the proposed fourth amended complaint alleges that the panel banks "conspired to suppress LIBOR below the levels it would have been set had Defendants accurately reported their competitive borrowing costs" and that "Defendants' LIBOR quotes during the Class Period did not appropriately reflect those banks' actual borrowing costs." (Proposed Fourth Am. Consolidated Class Action Compl. ¶¶ 124, 131 (emphasis added).) By contrast, in the corrected fourth amended complaint, Exchange plaintiffs changed these allegations, which now assert that the panel banks "conspired to suppress LIBOR below the levels it would

have been set had Defendants accurately reported their competitive offered rates" and that "Defendants' LIBOR quotes during the Class Period did not appropriately reflect those banks' actual offered rates." (Corrected Fourth Amended Complaint ¶¶ 115, 122, Dec. 11, 2017, ECF No. 2363 (emphasis added).)[85]

By asserting that "Dr. Willig concluded that LIBOR supposedly was not 'systematically' suppressed" (Exch. Pls.' Willig Mem. 6 (citing Willig Initial Report ¶¶ 6, 75, 192)), Exchange plaintiffs have either continued to define LIBOR suppression as the making of submissions below actual borrowing costs or mischaracterized Dr. Willig's opinions deliberately. In each of Dr. Willig's opinions identified by Exchange plaintiffs, Dr. Willig opines that panel banks' LIBOR submissions were not systematically below their average borrowing costs as observed in interbank transaction data; he does not opine that there was no systematically suppression of LIBOR. (Willig Initial Report ¶ 6(a) ("Common evidence cannot show that the panel banks' LIBOR submissions during the Suppression Class Period were systematically 'Low,'" with "Low" defined as

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[85] Exchange plaintiffs did not initially disclose these changes, which we discovered after we directed the filing of a redline comparing the proposed fourth amended complaint and the corrected fourth amended complaint. (Letter from Christopher Lovell & David Kovel to the Court, Dec. 13, 2017, ECF No. 2370.) Even setting aside the question of whether the scope of Exchange plaintiffs' leave to amend extends to changes like these, see Apr. 20, 2017 Order, slip op. at *11-12, ECF No. 1859 (granting "plaintiffs leave to supplement their complaint in [a] single regard," "the issue of speculative damages in the context of the efficient enforcer analysis"), they have only removed some of the "borrowing costs" allegations in the operative complaint. (e.g., Corrected 4AC ¶ 13 ("By acting together and in concert to knowingly understate their true borrowing costs, Defendants caused LIBOR to be set at artificial levels.")).

being below "the actual borrowing costs of the panel bank that made the submission"); id. ¶ 75 ("Plaintiffs cannot establish using common evidence that panel banks systematically made LIBOR submissions below their borrowing costs." (emphasis added)); id. ¶ 192 ("[A]vailable data on banks['] borrowing costs do not indicate that banks systematically made submissions below their borrowing costs . . . ." (emphasis added)).) Exchange plaintiffs' characterization of Dr. Willig's opinion is valid only if "suppression" is defined to be the making of submissions below actual borrowing costs -- a position that is difficult to reconcile with Exchange plaintiffs' criticisms of Dr. Willig's opinions premised on the notion that borrowing costs observed in actual transactions are irrelevant to the LIBOR question.

In one section of his report, Dr. Willig does conduct an analysis in which panel banks' actual LIBOR submissions are replaced with the corresponding average rate observed in the transaction data. (Willig Initial Report ¶¶ 89-101.) However, this analysis is intended to be illustrative of the principle that changes in LIBOR submissions may not always impact published LIBOR, as Dr. Willig explicitly disclaims: his "re-calculations of the LIBOR rates after substituting banks' average London Interbank Borrowing costs for their submissions are not intended to be estimates of but-for rates." (Willig Initial Report ¶ 96 n.82.) This analysis is comparable to Dr. Netz's median-replacement

analysis, which is similarly intended to show that changes in LIBOR submissions impact published LIBOR only some of the time, which is also not intended to be a calculation of but-for LIBOR, and which is also admissible. See supra section III.1.2.2.

2.3.1.2. The Text of the LIBOR Question

Exchange plaintiffs' extensive allegations regarding "borrowing costs" and reliance on a mischaracterization of Dr. Willig's opinions warrant denial of their motion standing alone, but we nonetheless proceed to consider the various sources on which Exchange plaintiffs rely to bolster their recently adopted interpretation of the LIBOR question.

As an initial matter, despite their repeated invocation of "offer rates" and "offered rates," Exchange plaintiffs never define with precision what exactly they mean by those terms: it remains unclear whether, under their interpretation, whether an "offer rate" or "offered rate" refers to the first rate floated by a lending bank (regardless of how high or how serious that number might be), the first rate offered by a lending bank that is sufficiently reasonable such that it serves as a starting point for negotiations, or some other number entirely. Regardless, to render Dr. Willig's analyses inadmissible, the LIBOR question must preclude consideration of actual transaction rates altogether. None of the myriad sources relied upon by Exchange plaintiffs comes close to establishing such a proposition, i.e., that consideration

of actual transaction rates is irrelevant to considering whether LIBOR submissions were suppressed.

We follow the parties' lead and begin with the text of the LIBOR question, which asks: "At what rate could you borrow funds, were you to do so by asking for and then accepting inter-bank offers in a reasonable market size just prior to 11 am" London time? Exchange plaintiffs cite the phrase "by asking for and accepting inter-bank offers" to emphasize that the LIBOR question asks about offered rates, (Exch. Pls.' Willig Mem. 9.); UBS counters that the words "accepting" and "offers" indicate that the LIBOR question refers to "final offers that would result in transactions," as "[t]he offer a bank would accept is the final offer, not any initial offer it might have received." (UBS Willig Opp'n 6, 8.)

We conclude that the text of the LIBOR question is at least somewhat ambiguous. We agree with UBS that the LIBOR question cannot refer to any initial "offer" that is made, as doing so would render superfluous the LIBOR question's language "and accepting." An offer could be sufficiently high such that the panel bank would not "accept" the offer, even as a starting point for negotiations. On the other hand, we do not share UBS's confidence that the LIBOR question refers to only final "offers" that are "accepted" (akin to how those terms are used in contract law) and become consummated transaction rates. UBS's argument would eliminate entirely the

distinction between offered rates and transaction rates, and LIBOR remains an offered rate.

We need not resolve definitively this ambiguity now, as it does not render Dr. Willig's analysis of actual transaction rates inadmissible. Dr. Willig acknowledges that LIBOR represents an "offered" rate (Willig Initial Report ¶ 66), and does not suggest that panel banks' actual transaction rates should be substituted as but-for estimates of panel banks' LIBOR submissions (Willig Initial Report ¶ 96 n.82). Rather, Dr. Willig opines that consummated transaction rates are relevant in the determination of a panel bank's LIBOR submissions; nothing in the wording of the LIBOR question suggests that this assumption is an unreliable one.

2.3.1.3. BBA Publications

This understanding of the LIBOR question is confirmed by several BBA publications identified by the parties. None of these sources precludes the consideration of actual transaction rates.

The first BBA publication addressed by the parties is the October 2010 version of a BBA webpage titled The Basics, which according to Exchange plaintiffs (Exch. Pls.' Willig Reply 3), states that LIBOR rates "are not based on actual transaction[s]" and that "[t]he key concept is that [LIBOR] is based on the offered rate, and not the bid rate." (Decl. of Victor Stewart ex. 2, Aug. 4, 2017, ECF No. 2188 ("Stewart Willig Decl.").) In so arguing, Exchange plaintiffs conspicuously omit the first quoted sentence's

full context. In full, that sentence reads: "The rates are not necessarily based on actual transaction[s], indeed it would not be possible to create the suite of [LIBOR] rates if this was a requirement, as not all banks will require funds in marketable size each day in each of the currencies and maturities they quote." (Stewart Willig Decl. ex. 2 (emphasis added).) The use of "necessarily" implies that actual transaction rates do form a basis for a bank's LIBOR submissions, an implication confirmed by the subsequent reference to potential data availability issues as the reason why a basis in actual transaction rates is not a "requirement" of panel bank's LIBOR submissions. The second quoted sentence is irrelevant to our analysis, as Dr. Willig's analysis of actual transaction rates is not an analysis of bid rates. Exchange plaintiffs also cite similar language in a May 2008 supplementary memorandum, which uses language largely identical to the The Basics webpage cited by Exchange plaintiffs. (Stewart Willig Decl. ex. 3.) The lone difference is that it omits the word "necessarily" that Exchange plaintiffs also omitted in their discussion of the The Basics webpage, and we find plaintiffs' reliance similarly unavailing.

Exchange plaintiffs also misattribute the first sentence to an October 2009 BBA document entitled "Guidelines for [C]ontributing BBA LIBOR Rates," (Decl. of Fred Isquith ex. 5, July 10, 2017, ECF No. 2074 ("Isquith Willig Decl.")), which turns

out to provide interpretive guidance. This document states that "[u]nder certain circumstances, contributor banks will take funds at levels above or below LIBOR" and that such an occurrence "does not necessarily mean that they should raise or drop their rates to these levels" (emphasis added), and also explains that "the rates submitted into the process are a bank's own view of its cost of funds, based on the totality of the information available to a bank from both internal and external sources." (Isquith Willig Decl. ex. 5.) This document strongly suggests that a panel bank's submission should be informed by actual transaction rates, which unquestionably form part of the "totality of information available to [the] bank."

A second BBA webpage, titled Definitions, is a second point of contention.[86] Here, the BBA states that "[c]ontributions must represent rates at which a bank would be offered funds in the London interbank market," and that "[t]he rate at which each bank submits must be formed from that bank's perception of its cost of unsecured funds in the London interbank market." (Mishkin Willig Decl. ex. 8; Isquith Willig Decl. ex. 8.) Again, we interpret this page to mean that while LIBOR represents an offered rate, actual transaction rates retain relevance in a bank's determination of its LIBOR submission. The rate at which the bank

[86] Exchange plaintiffs rely on the July 10, 2017 version of the webpage and UBS relies on the July 20, 2017 version, but the two versions are identical. (Isquith Willig Decl. ex. 8; Mishkin Willig Decl. ex. 8.)

is actually receiving funding is plainly relevant to how the bank forms its "perception of its cost of unsecured funds."

Exchange plaintiffs also attribute to this webpage the BBA's statement that the 1998 revision to the LIBOR question "enables accountability for the rates."[87] (Exch. Pls.' Willig Mem. 12.) According to Exchange plaintiffs, "[s]uch 'accountability' could be achieved only if each Defendant preserved the 'offers' on which it based its daily submissions" (emphasis added), and that "all Defendants have engaged in the highly unusual, parallel conduct of refusing to maintain such offers or otherwise supply an 'accountable' offer as was promised by the BBA." (Exch. Pls.' Willig Mem. 11-12.)

Contrary to Exchange plaintiffs' assertion, the quoted statement actually appears in a May 2008 BBA memorandum. (Stewart Willig Decl. ex. 3). But regardless of source, this argument is rank speculation. Exchange plaintiffs provide no cogent explanation for why the BBA's remark about "accountability" made in the process of changing the focus of the LIBOR question from a hypothetical prime bank to the specific panel bank making a submission bears on the distinction between transaction rates and offered rates and whether Dr. Willig properly analyzed actual transaction data. Rather, changing the scope of the LIBOR question

[87] Prior to this revision, the LIBOR question read: "At what rate do you think interbank term deposits will be offered by one prime bank to another prime bank [in a] reasonable market size today at 11.00 am?"

to be panel bank-specific is consistent with one notion of "accountability" in that it requires the panel bank to focus on its own circumstances and not those of a hypothetical bank, a focus consistent with Dr. Willig's approach of examining the transactions in which a panel bank actually engaged.

Third, Exchange plaintiffs rely on a June 2008 BBA "consultative paper" titled "Understanding the Construction and Operation of BBA LIBOR -- Strengthening for the Future," (Stewart Willig Decl. ex. 8), and what appear to be two earlier drafts from May 6, 2008 and May 13, 2008 (Stewart Willig Decl. ex. 4; Isquith Willig Decl. ex. 11).[88] Exchange plaintiffs quote the BBA's statement in the final paper that "[t]here is confusion amongst market commentators about what BBA LIBOR is for, and how it is constructed,"[89] but the final paper also explains that "[t]he rate at which each bank submits must be formed from that bank's perception of its cost of funds in the interbank market." (Stewart Willig Decl. ex. 8.) As we have discussed, a panel bank's perception unquestionably includes the rates at which it is actually obtaining funding.

The two earlier drafts discuss one potential change to LIBOR and the LIBOR question, "[l]oosen[ing] the definition of what is 'offered.'" (Stewart Willig Decl. ex. 4; Isquith Willig Decl. ex.

[88] These two earlier versions appear to be identical.

[89] This statement also bolsters our earlier conclusion that the text of the LIBOR question is ambiguous.

11.) Specifically, the drafts propose that "[a] change could be made [from the current "offer" definition] to the rate at which a bank can obtain unsecured funds." (Stewart Willig Decl. ex. 4; Isquith Willig Decl. ex. 11.) This statement also supports the contention that LIBOR is an offered rate, but again says nothing to undermine the propriety of considering actual transaction rates in a bank's determination of its LIBOR submission.

2.3.1.4. Additional Authorities

Next, Exchange plaintiffs rely on a JPMorgan Chase internal document from 2010 that purports to set forth JPMorgan Chase's LIBOR-submission policy. According to Exchange plaintiffs, JPMorgan Chase's policy establishes that LIBOR submissions are "not based on actual transaction[s]" and that LIBOR is to be "based upon the offered rate, and not the bid rate." (Exch. Pls.' Willig Mem. 10 (emphasis omitted).) As an initial matter, the characterization of this document as a JPMorgan Chase internal document is at least somewhat misleading, as Exchange plaintiffs do not acknowledge that the document quotes a significant portion of the BBA's Definitions page that Exchange plaintiffs have already cited. (Isquith Willig Decl. ex. 6; Mishkin Willig Decl. ex. 9.) Further, it is unpersuasive for the same reasons we find Exchange plaintiffs' reliance on the BBA's Definitions page unpersuasive: the first statement that "rates are not based on actual transaction[s]," when read in its proper context, refers to the

fact that actual transactions may not occur in all currencies and all tenors, and the second statement that LIBOR is "based upon the offered rate, and not the bid rate" is irrelevant because Dr. Willig analyzes observed transaction rates, which are neither bid rates nor (as Exchange plaintiffs strenuously contend) offered rates.[90]

Exchange plaintiffs also contend that "academic papers have repeatedly followed" the description of LIBOR as an offer rate, citing only A Comparison of LIBOR to Other Measures of Bank Borrowing Costs, a 2012 working paper coauthored by Dennis Kuo, a then-PhD student at the University of California, Los Angeles, and two economists at the Federal Reserve Bank, David Skeie and James Vickery. (Stewart Willig Decl. ex. 5 ("Kuo, Skeie & Vickery")). They identify specifically the authors' statement that "Libor is an offer rate" and that "Libor measures the rate at which banks estimate they would be offered unsecured funds, not the rate at which they would accept those offers." (Kuo, Skeie & Vickery at 7 (emphasis omitted).) Setting aside the question of the weight

[90] Given that we find unpersuasive Exchange plaintiffs' reliance on this JPMorgan Chase document, we also reject the notion that JPMorgan Chase should be "estopped" from offering Dr. Willig's opinions. (Exch. Pls.' Willig Mot. 10.) This questionable conception of "estoppel" has no basis in law, but if we were to apply it, we would conclude that certain named plaintiffs' testimony that LIBOR is based on actual transaction rates would preclude Exchange plaintiffs from offering many of the arguments supporting their challenge to Dr. Willig's opinions. For example, Atlantic Trading's 30(b)(6) representative testified, in response to the question "when a LIBOR submitter is making their decision about what to submit, could they consider their actual borrowing costs that day," that he "would think that's the sole thing they're basing it on." (Mishkin Willig Decl. ex. 3.)

to which the paper is entitled given its unpublished nature, we find nothing in this paper that undercuts Dr. Willig's reliance on observed transaction rates. Indeed, we find Exchange plaintiffs' reliance on this paper somewhat curious, as the authors devote a substantial portion of the paper to comparing LIBOR submissions to actual interbank loan rates calculated from a payment dataset published by the Federal Reserve. (Kuo, Skeie & Vickery fig.5, tbl.2.).[91]

In reply, Exchange plaintiffs also cite a February 2010 Credit Suisse Fixed Income Research report titled <u>A Guide to the Front-End and Basis Swap Markets</u>, and in particular, the report's statement that "[t]he fixed LIBOR rate is not precisely linked to the rate a contributing bank would bid for funding, <u>nor it is directly tied to the rate at which a given contributor would offer funding</u>." (Stewart Willig Decl. ex. 6. (emphasis added)). But this statement diminishes, rather than heightens, the importance of the initial rates "offered" by a lending bank, as it provides on its face that a panel bank's LIBOR submission is "not directly tied" to any specific offers. Rather, the report continues: "Instead, it reflects where a given bank deems it could borrow funds in reasonable size should it seek to do so. In essence, the

[91] Indeed, the paper makes clear that the relationship between actual transaction rates and offered rates is a function of the bid-ask spread. (Kuo, Skeie & Vickery at 7.) The existence of such a relationship, which suggests that the difference between actual transaction rates and offered rates can be controlled for, bolsters Dr. Willig's analysis.

banks are being asked to disclose the rate at which they believe the market would be willing to offer cash to them should they desire funding. It is the contributing bank's perception of where others would offer them funding. Sentiment is, therefore, critical for the direction of LIBOR." (Stewart Willig Decl. ex. 6.). This discussion again suggests that a panel bank's submission should be based on its "perception" of the rate at which it could receive funding. Though we have already so held, it bears repeating that the rate at which the bank is actually receiving funding is relevant to the bank's belief regarding the rate at which the market would be willing to offer it funding.

2.3.1.5. Conclusion

In sum, the text of the LIBOR question and various documentary sources make clear that while LIBOR represents an offer rate and is not itself a transaction rate, rates observed in actual, consummated transactions are nonetheless properly considered in a panel bank's determination of its LIBOR submissions. In turn, because actual transaction rates are properly considered in a panel bank's determination of its LIBOR submissions, they are properly considered in our assessment of whether a bank's LIBOR submissions were suppressed and whether such suppression can be established through common evidence. Exchange plaintiffs' argument to the contrary -- the necessary implication of their argument here -- is simply unavailing.

Exchange plaintiffs' criticism of Dr. Willig's secondary analysis, in which he analyzes "the 95th percentile spread above the weighted average rate for each bank-tenor-day" as a "conservative measure of the ask rate," (Willig Initial Report ¶ 67 & n.68), is unpersuasive for the same reasons. Exchange plaintiffs cannot dispute that the Dr. Willig's 95th percentile measure is higher than, and therefore conservative as compared to, the weighted-average transaction rates examined in his primary analysis.[92]

2.3.2. Data Sufficiency

Exchange plaintiffs next argue that Dr. Willig's opinions are based on insufficient data. In particular, they contend that "Dr. Willig states that 'Bank of America had Low LIBOR submissions on only 2 percent of tenor-days and JPMorgan on 4 percent of tenor-days' during the Suppression Period' [sic]", and that for the 3-month tenor, this assessment is based on only 15 days and 4 days of data for Bank of America and JPMorgan Chase, respectively. (Exch. Pls.' Willig Mem. 19.) In support of this argument, Exchange plaintiffs cite two authorities identifying problems posed by small sample sizes in the statistical context.

[92] Exchange plaintiffs additionally argue that Dr. Willig's selection of the 95th percentile is unsupported and speculative. This assumption is not troubling given that this analysis is conservative compared to Dr. Willig's primary analysis based on weighted-average transaction rates; the line must be drawn somewhere.

First, Exchange plaintiffs offer no explanation why an assessment of Dr. Willig's sample size should be based on only one specific tenor. Rather, we expect more interbank lending activity in certain tenors than others, an expectation confirmed by the BBA's statement that "not all banks will require funds in marketable size each day in each of the currencies and maturities they quote" (e.g., Stewart Willig Decl. ex. 2), and through a review of Appendix 5 to the Willig Initial Report (which indicates substantially more activity in the overnight, one week, and one-month tenors).

Indeed, Exchange plaintiffs have alleged persistent suppression of LIBOR based on the panel banks' reputational concerns, and offer no reason why those concerns would be reflected in only one tenor. They cite allegations that traders sought "to profit from the widening of the spread between the 1-month, 3-month and 6-month LIBOR tenors" (Proposed Third Am. Consolidated Class Action Compl. ¶¶ 19, 226-27), and argue that "[t]his spread trading strategy could not have been successful if all LIBOR tenors were manipulated in the same direction at the same time." (Exch. Pls.' Willig Reply 10.) However, this argument fails to consider the fact that the spread-trading strategy so alleged could be successful if all LIBOR tenors were manipulated in the same direction, but to different extents.

Nor are Exchange plaintiffs' sample-size authorities persuasive in this context. Pollis v. New School for Social Research, 132 F.3d 115 (2d Cir. 1997), considered a statistical analysis on the merits, not whether that analysis was admissible under Daubert. Further, it referenced sample sizes far smaller than the datasets on which Dr. Willig bases his opinions. See id. at 120-22. The Reference Manual on Scientific Evidence identifies certain concerns regarding the application of statistical testing to small samples, but also states that "[h]owever, a meaningful statistical analysis yielding a significant result can be based on a small sample, and reliability does not depend on sample size alone." David H. Kaye & David A. Freedman, Reference Guide on Statistics, in Reference Manual on Scientific Evidence 211, 255 n.108 (3d ed. 2011). Exchange plaintiffs do not explain which statistical tests conducted by Dr. Willig are rendered flawed by small sample sizes, and we decline to speculate.

2.3.3. Opinion on the Merits

Finally, Exchange plaintiffs argue that we should construe Dr. Willig's opinions as his "final merits opinion on the ultimate issues" because "Dr. Willig does not state that his work is ongoing, that his opinions are not final, and that he is waiting for a full record to be developed before determining the appropriate, data-driven methods of analysis." (Exch. Pls.' Willig Mem. 6.)

This argument is patently absurd. First, the assertion that Dr. Willig offers ultimate opinions on the merits of whether LIBOR was in fact suppressed plainly mischaracterizes Dr. Willig's opinions and is an argument that we have already considered and readily rejected. Second, to the extent Dr. Willig's class certification opinions overlap with the merits question of whether LIBOR was in fact persistently suppressed, the "rigorous analysis" to be undertaken at class certification often "will entail some overlap with the merits of the plaintiff's underlying claim." Dukes, 564 U.S. at 351.

Ultimately, Exchange plaintiffs identify no authority for this "gotcha" argument that Dr. Willig did not expressly reserve the right to supplement his opinions if new information were made available to him. It seems safe to assume that an expert, as a practitioner of the scientific method, would consider relevant additional information and incorporate that information into his opinions. We see little reason why experts should be required to explicitly disclaim as much.

2.3.4. Conclusion

Exchange plaintiffs' motion to exclude Dr. Willig's opinions is denied. Even if Exchange plaintiffs were not bound by the extensive history of their allegations that panel banks suppressed LIBOR by understating their actual "borrowing costs," the motion is premised on a mischaracterization of Dr. Willig's report and

Dr. Willig's analysis of rates observed in consummated transactions. Rather, we conclude from our review of the text of the LIBOR question and other interpretive sources that a panel bank's LIBOR submission should be based on its perception of the rates it would be offered and the "totality of the information" available to it. Rates observed in consummated transactions are, almost axiomatically, part of that "totality of the information."

3. Trader-Based Manipulation Class

Having resolved the parties' Daubert motions, we now address the Exchange plaintiffs' motion for class certification itself. Though the Exchange plaintiffs seek certification of a single class of EDF traders who "were harmed" by trader-based manipulation, persistent suppression, or both, we conclude that the class should be analyzed as two separate subclasses: (1) class members advancing claims under a trader-based manipulation theory and (2) those advancing claims under a persistent suppression theory. See Fed. R. Civ. P. 23(c)(5) ("When appropriate, a class may be divided into subclasses that are each treated as a class under this rule."). As we have discussed extensively, claims grounded in allegations of trader-based manipulation are considerably different from claims rooted in allegations of persistent manipulation, see, e.g., LIBOR VI, 2016 WL 7378980, at *5 & n.8, slip op. at *11 & n.8 ("Profit-motivated trader-based manipulation, which was sporadic and would result in both the

inflation and deflation of LIBOR submissions, has nothing to do with the persistent suppression conspiracy that is at issue in the antitrust claims." (citations omitted)), and indeed, the parties' briefing reflects such a distinction.

A trader-based manipulation class, to the extent one is certified, would consist of (1) EDF traders holding certain EDF positions on the dates specified in subparts B.1 and B.2 of the class definition, and (2) traders "that were harmed" as a result of trader-based manipulation during the Class Period, as captured by the prefatory language in the class definition as well as subpart B.3. The prefatory language corresponds to the entire class period, January 1, 2005 to May 17, 2010, whereas subpart B.3 corresponds only to Period 0 (as Exchange plaintiffs have defined it), the period between January 1, 2005 to August 6, 2007.[93]

We first consider whether Exchange plaintiffs' proposed trader-based class relies on an impermissible "fail-safe" class definition as well as preliminary issues of standing, before turning to implied requirement ascertainability and the express requirements of Rule 23(a) and Rule 23(b)(3).

3.1. "Fail-Safe" Class Definition

Courts have taken varying approaches to the propriety of certifying a "fail-safe" class, or one that begs the liability question and is defined circularly in terms of legal injury. For

[93] Subpart B.3 is, therefore, wholly redundant of the prefatory language.

instance, we have previously suggested that a fail-safe class raises predominance issues under Rule 23(b)(3), reasoning that "[s]uch a class necessarily raises individual questions, as the factfinder must determine whether an individual has a claim in order to determine whether he or she belongs in the class." May 13, 2016 Order, 2016 WL 2851333 at *2, slip op. at *4-5. Courts have also concluded that fail-safe classes create manageability problems bearing on superiority under Rule 23(b)(3), are fundamentally unfair, or render the proposed class unascertainable. See Mazzei, 288 F.R.D. at 55; Ruiz v. Citibank, N.A., No. 10 Civ. 5950 (KPF), 2015 WL 4629444, at *7 (S.D.N.Y. Aug. 4, 2015); see also 1 William B. Rubenstein, Newberg on Class Actions § 3:6 (5th ed.) (Westlaw 2017). Other courts have rejected these concerns, often reasoning that potentially fail-safe language such as "and were damaged thereby" is superfluous and does not substantively alter the class definition's scope. See, e.g., Royal Park Invs. SA/NV v. Deutsche Bank Nat'l Tr. Co., No. 14 Civ. 4394 (AJN), 2017 WL 1331288, at *11 (S.D.N.Y. Apr. 4, 2017) (citing, inter alia, Fort Worth, 301 F.R.D. at 143-44); see also In re Initial Pub. Offering Sec. Litig. ("In re IPO II"), 671 F. Supp. 2d 467, 491-92 (S.D.N.Y. 2009); 1 William B. Rubenstein, Newberg on Class Actions § 3:6 (5th ed.) (Westlaw 2017) (collecting cases).

Exchange plaintiffs left ambiguous in their briefing whether the use of "harmed" refers to the concept of injury as articulated in Denney, which would be established as long as a trader was required to pay more money or received less money from a single EDF trade, see 443 F.3d at 264-65, or to the concept of "damages" (which requires a net harm once any harm from the alleged conduct are properly netted against any benefits resulting from that same conduct). The various decisions that certified a class that had been criticized for being impermissibly fail-safe -- In re Petrobras,[94] Royal Park, Fort Worth, and In re IPO II -- each used the term "damaged" rather than "harmed," thereby suggesting that Exchange plaintiffs meant the latter, but counsel at oral argument clarified that they meant the former. Hr'g Tr. 22:16-23:5.

Interpreted this way, the proposed class definition's use of "and were harmed" in this context is not mere surplusage, unlike the use of "and were damaged" deemed inoffensive in the cases upon which Exchange plaintiffs rely. In each instance, the fact of "damage" to any class member could be imputed from other parts of the class definition. For example, Royal Park considered the impairment of certain residential mortgage-backed securities (RMBS) resulting from the trustee's alleged failure to fulfill

[94] Contrary to Exchange plaintiffs' contention (Exch. Pls.' TBM Reply 7), the Second Circuit in In re Petrobras considered the certification of classes whose definitions included the criteria "and were damaged thereby," 862 F.3d at 259 (emphasis added), not "and were harmed thereby."

certain contractual obligations and considered a proposed class encompassing "[a]ll persons and entities who held Certificates in [certain RMBS trusts] and were damaged thereby." 2017 WL 1331288, at *1-2. The fact of damage could be implied from having held the RMBS certificates in question, since those certificates ultimately became impaired. Fort Worth considered an analogous factual circumstance (the issuance of RMBS certificates) and an analogous class definition ("persons or entities who, prior to March 23, 2009, purchased or otherwise acquired any Certificates [in specified offerings] and were damaged thereby"). 301 F.R.D. at 124-25. Similarly, in a typical securities fraud class action brought under Rule 10b-5 -- where the class period corresponds to the period during which the price of the security in question is inflated due to a defendant's material misrepresentations or omissions, and where the class definition refers to purchasers of securities during those periods -- language such as "and were damaged" also becomes superfluous. The fact of damage follows from the fact of price inflation and the limitation of the class to purchasers, who by definition will have overpaid for the security in question. Cf. In re Petrobras, 862 F.3d at 259-60.

Not so here. The mere fact that a person or entity traded in EDFs during the class period does not mean that the trader was damaged, unlike the holder of an impaired RMBS certificate or the buyer of a security who purchased at an inflated price. Indeed,

by arguing that Rabobank's "fail-safe" argument seeks "to limit the Class prematurely to presently-known TBM dates," (Exch. Pls.' TBM Reply 8), Exchange plaintiffs implicitly concede that the inclusion of "and were harmed" in the proposed class definition serves to incorporate traders "harmed" by currently unidentified instances of trader-based manipulation -- instances that are, by definition, not otherwise captured in the class definition.

However, we need not determine finally the impact of the class definition's use of "and were harmed" on whether the class may be certified, as Rule 23 does not explicitly preclude certification of fail-safe classes. Rather, the contention that a class is "fail-safe" often serves as shorthand for defects in the requirements explicitly set forth in Rule 23, including predominance in particular. Cf. Mazzei, 288 F.R.D. at 55 ("The fail-safe appellation is simply a way of labeling the obvious problems that exist." (quoting Kamar v. Radio Shack Corp., 375 F. App'x 734, 736 (9th Cir. 2010)). Accordingly, we will undertake the "rigorous analysis" of each Rule 23 requirement as directed by the Supreme Court, Dukes, 564 U.S. at 351, and in doing so take into account the considerations supporting the assertion that the proposed class is improperly "fail-safe." These considerations, of course, include our previously expressed concern that plaintiffs' use of "were harmed" raises predominance issues because individual inquiry will be necessary to determine who is

even a class member. May 13, 2016 Order, 2016 WL 2851333 at *2, slip op. at *4.

3.2. Standing

The parties next dispute issues of "standing" as they relate to the class representatives and the proposed class. Rabobank's arguments appear to pertain to class standing, whereas Exchange plaintiffs respond with arguments regarding Article III standing. We consider both.

3.2.1. Article III Standing

To reiterate, any class must "be defined in such a way that anyone within it would have [Article III] standing." Denney, 443 F.3d at 264. Though Denney's requirement that all class members have Article III standing is stringent, its definition of what constitutes "injury" is relaxed: "the fact that an injury may be outweighed by other benefits, while often sufficient to defeat a claim for damages, does not negate [Article III] standing." Id. at 265.[95]

[95] Exchange plaintiffs' reliance on the Seventh Circuit's decision in Kohen v. Pacific Investment Management Co. ("Kohen II"), 571 F.3d 672 (7th Cir. 2009), is not persuasive. Though Kohen II held that "as long as one member of a certified class has a plausible claim to have suffered damages, the requirement of standing is satisfied" in the Seventh Circuit, id. at 676, and accepted the probability that "a class will often include persons who have not been injured by the defendant's conduct," id. at 677, the Second Circuit takes a different approach in requiring at least some analysis of absent class members' Article III standing, see Denney, 443 F.3d at 264-65. See generally In re Deepwater Horizon, 739 F.3d 790, 800-02 (5th Cir. 2014) (comparing the Seventh Circuit's approach to Article III standing in Kohen II and the Second Circuit's approach in Denney). Kohen II and Denney may ultimately yield the same result, cf. id. at 802-04 (reaching the same result applying both tests), but we are nonetheless bound to apply Denney.

"Since [the elements of Article III standing] are not mere pleading requirements but rather an indispensable part of the plaintiff's case, each element must be supported in the same way as any other matter on which the plaintiff bears the burden of proof." Lujan, 504 U.S. at 561. Accordingly, Article III standing is assessed based on the plaintiff's allegations at the pleading stage. Id.; see, e.g., Spokeo, 136 S. Ct. at 1547. "In response to a summary judgment motion, however, the plaintiff can no longer rest on such 'mere allegations,' but must 'set forth' by affidavit or other evidence 'specific facts'" that are taken as true. Lujan, 504 U.S. at 561 (quoting Fed. R. Civ. P. 56(e)).

Class certification does not always fit neatly into this framework. For example, when the consideration of class certification occurs at the pleading stage and precedes motions to dismiss, see, e.g., 1 William B. Rubenstein, Newberg on Class Actions § 2:2 (5th ed.) (Westlaw 2017), allegations as to the named plaintiffs' standing would appear to suffice under Lujan and its progeny. Here, however, we have proceeded beyond the pleading stage, but have not yet reached summary judgment. The Lujan framework accordingly does not directly address whether standing should be assessed at this point based on allegations or evidence. Cf. In re Deepwater Horizon, 739 F.3d at 800 ("[This framework] does not explain, in particular, how courts are to evaluate standing for the purposes of class certification . . . .") The

Second Circuit in Denney held that "[w]e do not require that each member of a class submit evidence of personal standing," 443 F.3d at 263 (emphasis added), but also referenced standing in terms of allegations, see id. ("For purposes of determining standing, we 'must accept as true all material allegations of the complaint.'" (quoting Warth v. Seldin, 422 U.S. 490, 501 (1975)), and further held that "[p]assive members need not make any individual showing of standing," id. at 264 (emphasis added) (quoting 1 Herbert B. Newberg & Alba Conte, Newberg on Class Actions § 2:7 (4th ed. 2002)).

Though the law remains somewhat unsettled, we nonetheless distill the following principles to guide our analysis. First, the class must "be defined in such a way that anyone within it would have [Article III] standing." Id. at 264. Second, because absent class members need not "submit evidence of personal standing," id. at 263, we consider absent class members' Article III standing solely based on plaintiffs' allegations and the class definition. Third, we interpret the same holding in Denney to require, by negative implication, evidence of named plaintiffs' standing at this juncture. Though the record may not be as well-developed as at summary judgment, the class certification process in this case has nonetheless entailed extensive discovery (including the production of documents pertaining more to the merits than to class certification), and evidence establishing a

named plaintiff's standing should be well within that plaintiff's control in any event.[96]

Applying Denney's stringent requirement that every class member have Article III standing coupled with its relaxed standard for what constitutes Article III "injury," we conclude that the proposed trader-based class satisfies Article III's standing requirements. For the thirteen instances of trader-based manipulation specifically identified by date in subparts B.1 and B.2 of the class definition, the direction of manipulation alleged and the trading position specified in the class definition are sufficient to ensure that each class member captured by these subparts has experienced some injury-in-fact. As to the catch-all for undiscovered instances of trader-based manipulation, the class definition's use of "were harmed" necessarily limits the prefatory language and subpart B.3 to individuals and entities that were injured.

Additionally, Exchange plaintiffs have presented evidence of named plaintiff Atlantic Trading's standing to assert trader-based claims in response to our January 9, 2018 order directing the submission of data regarding the named plaintiffs' trading positions on the 13 days identified in subparts B.1 and B.2 of the

[96] Further, even if we were to assess the named plaintiffs' Article III standing based only on allegations, any evidentiary deficiencies would likely present typicality and adequacy of representation issues at the Rule 23 stage. See In re IPO, 471 F.3d at 41-42.

class definition. (Decl. of Thomas Elrod, Jan. 16, 2018, ECF No. 2405.) While this submission also indicates certain named plaintiffs had no net trading position on the 13 identified days (or engaged in no trading at all), and Rabobank identifies significant issues as to named plaintiff 303030 Trading's ability to assert claims,[97] these issues do not defeat the class's Article III standing. For purposes of the trader-based manipulation class, these named plaintiffs could be considered merely "absent" class members whose standing would be assessed on allegations and the class definition rather than on evidence, since we have already concluded that the proposed class definition satisfies Denney's requirements as to absent class members.[98]

3.2.2. Class Standing

Finally, turning to class standing, we reiterate that a named plaintiff must have a net trading position that would have been adversely affected by the manipulation on a given day in order to have class standing to represent absent class members with claims based on manipulation on that date. See Apr. 15, 2016 Order, 2016

[97] We revisit these issues in our analysis of typicality.

[98] For this reason, Denney and Kohen II are likely to produce the same substantive result in most cases. Provided there is at least one named plaintiff providing sufficient evidence of its personal Article III standing, additional named plaintiffs failing to meet the (higher) evidentiary threshold would simply be considered absent class members subject to the (lower) pleading standard. As Waller v. Hewlett-Packard Co. observed in the context of the Ninth Circuit's intra-circuit Denney/Kohen II split: "Stearns [the Ninth Circuit's application of Kohen II] says absent class members don't need standing and Mazza [the Ninth Circuit's application of Denney] says they do, but Mazza . . . seems to set a rather low bar for standing anyway." 295 F.R.D. 472, 476 (S.D. Cal. 2013) (citing Mazza v. Am. Honda Motor Co., 666 F.3d 581 (9th Cir. 2012); Stearns v. Ticketmaster Corp., 655 F.3d 1013 (9th Cir. 2011)).

WL 1558504, at *9, slip op. at *24, ECF No. 1380. Comparing the Second Circuit's decisions in NECA and RBPA, both of which involved suits by RMBS certificate holders against the issuers and underwriters of those certificates, we noted that "[u]nlike the violations alleged in NECA, which involved 'the same misstatements across multiple offerings,' the claims in [RBPA] 'must be proved loan-by-loan and trust-by-trust.'" Id. at *8, slip op. at *23-24 quoting RBPA, 775 F.3d at 162). Reasoning that because "[t]rader-based claims are 'day-to-day' and 'episodic,' and plaintiffs must prove the substantive elements of each claim," we concluded that "named plaintiffs do not have class standing to bring claims on days on which they did not hold a relevant net position." Id. at *9, slip op. at *24. Exchange plaintiffs' arguments, directed towards Article III standing, offer no reason to revisit this class standing analysis, see LIBOR III, 27 F. Supp. 3d at 481, slip op. at *65 ("[T]he Second Circuit considers the questions of Article III, statutory, and class standing as distinct."), and we again conclude that a named plaintiff must have a net trading position on a given day in order to have class standing to assert trader-based claims on behalf of absent class members.

3.3. Ascertainability

Rabobank, in its brief in opposition to class certification, contended that the proposed class was not ascertainable. Citing a lack of available trading records and Exchange plaintiffs'

apparent difficulty in obtaining such records, Rabobank argued that the class was not ascertainable because it was not administratively feasible. (Rabobank TBM Opp'n 7-14.) Following the Second Circuit's decision in In re Petrobras, Rabobank has generally recast its administrative feasibility arguments as predominance arguments, limiting its ascertainability argument to the critique that Exchange plaintiffs' use of "were harmed" in the class definition is insufficiently definite or objective. (Letter from David Gelfand to the Court, July 21, 2017, ECF No. 2098.)

Rabobank's administrative feasibility arguments now present predominance issues; they do not raise a serious ascertainability challenge. See In re Petrobras, 862 F.3d at 269 ("Ascertainability does not directly concern itself with the plaintiffs' ability to offer proof of membership, an issue that is already accounted for in Rule 23." (emphasis omitted)). To the extent that Rabobank continues to contest ascertainability, we conclude that the criteria Exchange plaintiffs have used, which define class members based on the timing of their trades, are sufficiently objective and definite to satisfy the "modest" ascertainability requirement. Though the class definition's use of "and were harmed" in the class definition is perhaps not as definite as would be ideal, it remains clear "who is suing about what," which is all that ascertainability requires. Id.

3.4. Rule 23(a)

3.4.1. Numerosity

We find it more likely than not that the proposed class definition encompasses more than 40 individuals and entities. We base this conclusion on the sheer number of "large traders" transacting in the EDF market, who themselves form only a portion of the total population of EDF traders in the market. See LIBOR VI, 2016 WL 7378980, at *17 & n.27, slip op. at *44-45 & n.27 (noting evidence establishing a "total population of over 2,900 large traders" in the EDF market between October 2008 through December 2010). Though this statistic does not correspond to Period 0 (as Rabobank correctly identifies), we nonetheless find that the number of large traders in Period 0 is unlikely to be so much smaller than the number of large traders identified by the CME from 2008 through 2010 such that numerosity would be called into question. Given this high starting point, the class definition more likely than not encompasses 40 members even if limited to class members with net positions on days with trader-based manipulation, thereby satisfying Rule 23(a)(1)'s numerosity requirement. See Pa. Pub. Sch. Emps., 772 F.3d at 120.

3.4.2. Commonality

"Rule 23(a)(2) simply requires that there be issues whose resolution will affect all or a significant number of the putative class members." Nextel, 780 F.3d at 137. Under this standard, we find that the question of the days on which manipulation of

Rabobank's 3-month LIBOR submission could have impacted published LIBOR is one common to the class. The inputs to this determination -- Rabobank's LIBOR submissions, the submissions made by the other panel banks, and the interquartile trimming methodology applied by the BBA -- are sufficient to yield an answer for all class members.

Rabobank asserts that the answer to the question of whether its 3-month LIBOR submissions could have impacted published LIBOR will vary day-to-day and, by extension, from class member to class member. The point is well-taken, but Rabobank poses the wrong question: the same evidence -- data series of each panel bank's LIBOR submissions -- suffices to determine whether Rabobank's submission could have affected LIBOR on each day in the class period. There is no reason to conduct this analysis at the daily level (as Rabobank implicitly suggests) when historical LIBOR submissions data are available as a single data series for the entire Class Period -- data on which Dr. Hubbard, Rabobank's own expert, relied. We accordingly conclude that this question is a common one, as "the same evidence will suffice for each member to make a prima facie showing." Tyson Foods, 136 S. Ct. at 1045 (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:50 (5th ed. 2012)).

3.4.3. Typicality

As an initial matter, a named plaintiff must have a trading position that would have been negatively impacted by alleged LIBOR

manipulation in order to have a claim that is typical.[99] Rabobank accordingly contends that the named plaintiffs' claims are not typical because none of the three named plaintiffs asserting TBM claims -- 303030 Trading, Atlantic Trading, and Metzler Investment -- have provided evidence of their net trading positions.[100] (Rabobank TBM Opp'n 19-21.) This issue is mitigated, but not resolved entirely, by Exchange plaintiffs' submission regarding their trading positions (Decl. of Thomas Elrod, Jan. 16, 2018, ECF No. 2405), made pursuant to our January 9, 2018 order, see Jan. 9, 2018 Order, ECF No. 2400.[101] We consider each named plaintiff in turn.

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[99] We are unpersuaded by Exchange plaintiffs' reliance on In re Amaranth Natural Gas Litigation, 269 F.R.D. 366, 371 n.9 (S.D.N.Y. 2010), for the proposition that class certification (including a finding of typicality) is proper even when named plaintiffs "may have received a net benefit as a result of the alleged manipulation." (Exch. Pls.' TBM Reply 9.) Amaranth cited Kohen v. Pacific Investment Management Co. ("Kohen I"), for this proposition, but Kohen I referenced net benefit to absent class members swept into an allegedly overbroad class definition, not to named plaintiffs. See Kohen I, 244 F.R.D. 469, 475 (N.D. Ill. 2007).

[100] Rabobank frames these arguments as challenges to the named plaintiffs' standing, but we conclude they are equally applicable to typicality.

[101] At oral argument, Rabobank questioned whether the data presented in Exchange plaintiffs' January 16, 2018 submission are accurate, asserting that several of the critical assumptions underlying those calculations were not disclosed. (Hr'g Tr. 72:22-74:24.) Though we have previously emphasized the importance of making clear the bases for any calculation of trading positions and question why Exchange plaintiffs did not proffer evidence establishing the named plaintiffs' standing after we struck Dr. Seyhun's August 2017 declaration, see Jan. 9, 2018 Order, ECF No. 2400; Sept. 7, 2017 Order, ECF No. 2255, we nonetheless afford Exchange plaintiffs the benefit of the doubt and accept the data presented in the January 16, 2018 Elrod declaration. Absent the information contained in that declaration, Exchange plaintiffs would have scant evidence supporting the typicality of their claims or the adequacy of their representation. Exchange plaintiffs' representations that they engaged in extensive trading throughout the class period (e.g., Exch. Pls.' TBM Reply 10-11), absent some supporting evidence, are simply insufficient.

First, we find that Atlantic Trading's claims are typical of the class's claims as to the 13 days specified in subparts B.1 and B.2 of the class definition. Exchange plaintiffs' submission shows that Atlantic Trading, for each of those 13 days, held a net trading position that would have been harmed by the direction of manipulation alleged: it took a long net position on EDFs on the four days identified in subpart B.1 and a short net position on EDFs on the nine days identified in subpart B.2.

Second, we conclude that 303030 Trading's claims are not typical because 303030 Trading is subject to the unique defense that its claims were invalidly assigned to it from its principal, Bradley Belden. A report from the Illinois Secretary of State establishes that 303030 Trading was not formed until November 29, 2007, (Decl. of Robert Lindholm ex. 61, June 30, 2017, ECF No. 2027), and therefore could not have engaged in trading during Period 0, which ended in August 2007. After Rabobank identified in its opposition brief that Belden had not assigned any of his claims to 303030 Trading, (Rabobank TBM Opp'n 19 n.15), Belden executed an assignment of claims to 303030 Trading on August 4, 2017 -- the date on which Exchange plaintiffs' reply briefs in support of class certification were due. (Decl. of Thomas Elrod ex. 33, Aug. 4, 2017, ECF No. 2176.) We previously reserved judgment on the validity of this assignment. Sept. 7, 2017 Order, ECF No. 2255, slip op. at *1 n.1.

We now conclude that Belden's assignment is invalid. As a general matter, the assignee of a claim "possess[es] the same interest" as the assignor "and thus may continue to assert a claim for the same injury shared by all members of the class." Cordes & Co., 502 F.3d at 101. As the Second Circuit has recognized, "[i]t is indeed commonplace for an assignee to institute or continue an action of his or her assignor on an assigned claim even though he or she, apart from the assignment, is without standing." Id. at 102. However, the analysis in this case is complicated by the fact that 303030 Trading was voluntarily dissolved on October 25, 2011, as evidenced by the same report from the Illinois Secretary of State. (Decl. of Robert Lindholm ex. 61, June 30, 2017, ECF No. 2027.) Under Illinois law, "a limited liability company continues after dissolution only for the purpose of winding up its business," subject to limited exceptions. 805 Ill. Comp. Stat § 180/35-3(a). As relevant here, "[a] person winding up a limited liability company's business (1) may . . . prosecute and defend actions and proceedings, whether civil, criminal, or administrative." Id. § 180/35-4(c). But Belden's eleventh-hour assignment to 303030 Trading of claims -- based at least in part on trades occurring prior to 303030 Trading's formation -- can hardly be characterized as "for the purpose of winding up [303030 Trading's] business." Id. § 180/35-3(a). Rather, the assignment appears wholly unrelated to the business in

which 303030 Trading may have engaged during its entirely post-Period 0 existence. 303030 Trading's claims were therefore not validly assigned and are, by extension, atypical.

But of course, we need not have concluded that Belden's assignment to 303030 Trading was in fact invalid under Illinois law to hold that 303030 Trading's claims are not typical. Rather, the mere fact that 303030 Trading's claims are subject to a unique defense involving this question of Illinois law, which does not appear to have been extensively addressed by Illinois courts, is sufficient to render them atypical. See, e.g., In re Digital Music, 321 F.R.D. at 97-98 ("[T]he defendant need not show at the certification stage that [a] unique defense will prevail." (second alteration in original) (quoting Lapin, 254 F.R.D. at 179)).

Third, we also have serious doubts as to the typicality of Metzler's claims. Some ambiguity arises as to whether Metzler's constituent funds are legally distinct entities with the capacity to sue and be sued. Counsel suggested at oral argument that they were legally distinct and that only certain of Metzler's funds had assigned their claims to Metzler Investment, the named plaintiff. (Hr'g Tr. 75:22-25.) However, Metzler's 30(b)(6) representative had previously testified that the funds were not separate legal entities (Neuman Dep. 92:19-93:4, Decl. of Robert Lindholm ex. 63, June 30, 2017, ECF No. 2027), and Exchange plaintiffs had previously represented that "[n]one of Metzler's funds have

authority to bring legal claims themselves, and therefore all claims must instead be brought by Metzler as the funds' investment management company." (Letter from Christopher Lovell & David Kovel to the Court, July 5, 2017, ECF No. 2044.)[102]

To the extent Metzler's funds are not separate legal entities, netting of EDF trading positions would need to occur across all of Metzler's funds. "[A] plaintiff both injured and enriched by illegal activity cannot choose to recover for his injuries yet retain his windfall" where "both result from a single wrong." Minpeco, S.A. v. Conticommodity Servs., Inc., 676 F. Supp. 486, 488 (S.D.N.Y. 1987) (emphasis omitted) (citing Abrahamson v. Fleschner, 568 F.2d 862, 878 (2d Cir. 1977)). That is, Metzler "cannot claim damages where the same fraud alleged to be the cause of a loss" to certain funds "also permitted a countervailing gain" to other funds. Gordon v. Sonar Capital Mgmt. LLC, 92 F. Supp. 3d 193, 201–02 (S.D.N.Y. 2015) (quoting In re Refco Inc. Sec. Litig., No. 07 MD 1902 (JSR), 2013 WL 4078410, at *2 (S.D.N.Y. Aug. 2, 2013)). At minimum, the fact that any ambiguity persists at this point as to Metzler's status weighs against a finding of typicality.

But even accepting counsel's representation that Exchange plaintiffs' supplemental submission corresponds to each of

[102] In light of this prior representation regarding the legal capacity of Metzler's constituent funds, counsel's reference to the assignment of certain claims to Metzler as fund manager is somewhat puzzling.

Metzler's funds "that was relevant" to Period 0 or subpart C.2 of the class definition (Hr'g Tr. 75:10), we nonetheless conclude that Metzler's claims are not typical as to any of the 13 days identified in subparts B.1 and B.2 of the class definition. Rather, the only day on which any of the identified funds held a net trading position was July 30, 2007, when one of the funds held +89 EDF contracts. This trading position does not fit subpart B.2, which refers to traders having "sold Eurodollar futures contracts or purchased put options on Eurodollar futures" on July 30, 2007. Accordingly, Metzler's claims are not typical.

Fourth, a similar problem befalls the typicality of FTC Futures Fund PCC's claims. The only days in which it held net trading positions are September 1, 2006, and August 6, 2007, when it held +152 EDF contracts and +338 EDF contracts, respectively. As with Metzler on July 30, 2007, both of these trading positions are inconsistent with subpart B.2's description of class members having sold EDF contracts (or purchased put options on EDF contracts) on those two days. This problem extends, too, to FTC Futures Fund SICAV and September 1, 2006, when it held +405 EDF contracts. FTC Futures Fund SICAV did hold a net trading position of -479 EDF contracts on September 29, 2005, which is the only instance of either FTC entity holding a net trading position consistent with subparts B.1 and B.2 of the class definition.

Accordingly, once the named plaintiffs' trading positions are taken into account and the possibility of any unique defenses considered, we conclude that, as to the 13 days identified specifically in subparts B.1 and B.2 of the class definition, Atlantic Trading holds claims typical of the class's as to each of the 13 days and FTC Futures Fund SICAV holds claims typical of the class's claims only as to September 29, 2005.

But even if Atlantic Trading's and FTC Futures Fund SICAV's claims are typical of claims arising out of the 13 dates identified in subparts B.1 and B.2 of the class definition, their claims still would not be typical of those of the class when the class is defined to include any EDF trader that was "harmed" over Period 0. Just as we concluded that "the named plaintiffs do not have class standing to bring claims on days on which they did not hold a relevant net position" because such claims "do not involve 'the same set of concerns' as the claims brought on behalf of named plaintiffs," April 15, 2016 Order, 2016 WL 1558504, at *9, slip op. at *24 (quoting NECA, 693 F.3d at 162), such claims would not "arise[] from the same course of events," In re Flag Telecom, 574 F.3d at 35 (quoting Robidoux, 987 F.2d at 936), such that the pertinent issues of fact underlying the named plaintiffs' claims would not "occupy essentially the same degree of centrality" as

these additional claims, Mazzei, 829 F.3d at 272 (quoting Caridad, 191 F.3d at 293).[103]

Accordingly, our analysis of typicality more broadly follows from our class standing analysis. Exchange plaintiffs' attempt to cast trader-based manipulation at a high level of generality as a "unitary course of conduct" is unavailing (Exch. Pls.' TBM Reply 11), in light of our holdings that trader-based claims are by nature "day-to-day" and "episodic," Apr. 15, 2016 Order, 2016 WL 1558504, at *9, slip op. at *24.[104] Rather than arising from the "same events and conduct," we find that the claims here arise from distinct and discrete instances of alleged manipulation by individual traders. Indeed, the bulk of the evidence that Exchange plaintiffs present as to manipulation -- including trader communications suggesting manipulation -- pertain to only a single

[103] The class standing analysis is distinct from the analysis of typicality under Rule 23(a)(3), see NECA, 693 F.3d at 158 n.9, but the second prong of NECA's class standing test -- whether the challenged conduct "implicates the same set of concerns as the conduct alleged to have caused injury to other members of the putative class," RBPA, 775 F.3d at 161, parallels typicality's requirements that "each class member's claim arises from the same course of events," In re Flag Telecom, 574 F.3d at 35 (quoting Robidoux, 987 F.2d at 936), and that disputed issues "occupy essentially the same degree of centrality to the named plaintiff's claim as to that of other members of the proposed class," Mazzei, 829 F.3d at 272 (quoting Caridad, 191 F.3d at 293). See generally 1 William B. Rubenstein, Newberg on Class Actions § 2:6 (5th ed.) (Westlaw 2017) (considering the overlap between class standing requirements and Rule 23(a)). Of course, class standing may be established based on allegations alone, see RBPA, 775 F.3d at 161, but typicality must be established based on evidence presented at class certification and a preponderance of that evidence, see Bombardier, 546 F.3d at 202.

[104] And though we exclude this portion of Mr. Beevers's opinions, we observe that the argument that Rabobank pursued a "unitary course of conduct" is difficult to reconcile with Mr. Beevers's opinion that competing trading desks within a single financial institution are akin to "warring factions." (Beevers Initial Report ¶ 68.)

panel bank on one or two days, which not only confirms our earlier conclusion as to class standing but also bolsters our conclusion now about typicality.

3.4.4. Adequacy of Representation

Exchange plaintiffs assert, conclusorily, that Rabobank has not identified any antagonistic interests between members of the class and suggest that several cases, including In re Amaranth, 587 F. Supp. 2d 513; Kohen I, 244 F.R.D. 469; and In re Sumitomo Copper Litigation, 182 F.R.D. 85 (S.D.N.Y. 1998), support a finding of adequacy of representation here. (Exch. Pls.' Class Mem. 11-14; Exch. Pls.' TBM Reply 11-12.) However, the record strongly supports a finding of conflicts between class members in the context of this action, as a named plaintiff has incentive to establish trader-based manipulation only on days when it held trading positions that would have been harmed by that manipulation.

The classes in the three cases cited by Exchange plaintiffs, unlike the proposed class in this case, were defined to include only traders who transacted in a single direction and alleged manipulation in defined directions over the class period. For instance, the plaintiffs in In re Amaranth alleged that defendants "artificially inflat[ed] the spread between [certain] contracts" and "artificially depress[ed] settlement prices" and limited their proposed class to purchasers of natural gas futures contracts who did so for certain trading purposes. See In re Amaranth, 269 F.R.D

at 373-74. Similarly, the plaintiffs in Kohen I alleged that defendants sought to "profit from artificially high prices" of a certain futures contract and defined the proposed class to include only traders who purchased "a [specific] Treasury note futures contract in order to liquidate a short position." Kohen I, 244 F.R.D. at 473, 475. And in In re Sumitomo Copper, the plaintiffs alleged that "copper futures contract prices rose to artificially high levels by reason of conspiratorial misconduct of defendants" and created sub-classes for plaintiffs with long positions and plaintiffs with short positions. 182 F.R.D. at 87; see id. at 88 (defining subclasses).

The proposed class here remains far more open-ended. The class definition is indeterminate not only as to the days on which trader-based manipulation occurred, but also the direction of manipulation on those days. This indeterminancy presents far more opportunity for conflicting incentives between class members than existed in In re Amaranth, Kohen I, and In re Sumitomo Copper.[105]

An examination of the trading records produced by named plaintiff Atlantic Trading, the named plaintiff FTC Futures Fund entities, and Bradley Belden (who assigned his claims to named plaintiff 303030 Trading), confirms that these conflicts are

[105] We accordingly find Exchange plaintiffs' reliance on In re Natural Gas Commodities Litigation, 231 F.R.D. 171 (S.D.N.Y. 2005), which relied on Sumitomo Copper to certify a class of both "purchasers and sellers" alleging manipulation in both directions, unpersuasive. See In re Nat. Gas, 231 F.R.D. at 182-83 (citing In re Sumitomo Copper, 182 F.R.D. at 92).

concrete and hardly hypothetical.[106] Consider, for example, the trading position data presented in Exchange plaintiffs' January 16, 2018 submission. (Decl. of Thomas Elrod, Jan. 16, 2018, ECF No. 2405.) Again accepting as valid the underlying calculations, these data show conflicts between named plaintiffs on several of the 13 days specifically identified in the class definition. For instance, on September 1, 2006, while Atlantic Trading had a net trading position of -205.92 EDF contracts, FTC Futures Fund PCC had a net trading position of +152 EDF contracts and FTC Futures Fund SICAV had a net trading position of +405 EDF contracts. Similarly, on July 30, 2007, while Atlantic Trading had a net trading position of -2,162.68 EDF contracts, Metzler had a net trading position of +89 contracts. And finally, on August 6, 2007, while Atlantic Trading had a net trading position of -387.52 EDF contracts, FTC Futures Fund PCC had a net trading position of +338 EDF contracts. On those days, the named plaintiffs with opposite net trading positions will have directly conflicting incentives to establish not only the existence but also the magnitude of any manipulation that occurred on those dates.

Further, if Dr. Seyhun's various models of suppression were admissible, the estimates of suppression that they produce -- differing in both direction and magnitude -- would further

[106] These conflicts are between named plaintiffs, but we fully expect that similar conflicts would arise between named plaintiffs and absent class members.

undermine the adequacy of named plaintiffs' representation by heightening conflicts between class members' interests. Directional differences are particularly corrosive of adequacy in that they create directly conflicting incentives, but differences in the magnitude of suppression will similarly cause different class members to advocate for different models.

We therefore conclude that the proposed class fails to meet Rule 23(a)(4)'s adequacy of representation requirement. We find that class members' differing exposures to EDFs on different trading days creates differences between class members (both named plaintiffs and absent members) that undermine the class representatives' incentive to fully pursue the class's claims. See, e.g., In re Payment Card Interchange Fee, 827 F.3d at 231. To reiterate, a named plaintiff has an incentive to establish trader-based manipulation only on days when it held trading positions that would have been harmed by that manipulation. That is, phrased in the negative, a named plaintiff has no incentive to establish trader-based manipulation on a day on which it had no exposure to EDFs and has active disincentive to establish trader-based manipulation when the direction of that manipulation benefited its trading positions -- even if that manipulation harmed more class members or harmed class members in the aggregate. Exchange plaintiffs' own analysis of trading positions belies the contention that "all class members . . . have the same interest in

proving price artificiality" (Exch. Pls.' TBM Reply 16), and they ultimately offer no reason to believe that conflicts of this type do not exist within named plaintiffs and between named plaintiffs and absent class members throughout the class period, especially in light of the active, two-sided nature of the EDF trading market.

3.5. Predominance

Exchange plaintiffs' trader-based claims are based solely on the CEA, and we begin our analysis "with the elements of the underlying cause of action." Halliburton I, 563 U.S. at 809. To reiterate, a plaintiff asserting a direct CEA claim must establish "(1) that the [defendant] had the ability to influence market prices; (2) that [he] specifically intended to do so; (3) that artificial prices existed; and (4) that the [defendant] caused the artificial prices." LIBOR I, 935 F. Supp. 2d at 713, slip op. at *94-95 (alterations in original) (quoting DiPlacido v. CFTC, 364 F. App'x 657, 661 (2d Cir. 2009) (applying the four-part test applied by the CFTC)); see also, e.g., In re Platinum & Palladium, 828 F. Supp. 2d at 598. In analyzing these elements, we adhere to our earlier conclusion that EDFs, not published LIBOR, are the commodity in question. See LIBOR II, 962 F. Supp. 2d at 612, slip op. at *6-7; LIBOR I, 935 F. Supp. 2d at 721, slip op. at *115-16.

The parties do not distinguish between Exchange plaintiffs' direct CEA claims on the one hand and their vicarious liability

and aiding-and-abetting claims on the other. Neither do we. Vicarious liability "may be imposed where (1) the agent participated in the alleged unlawful activity and (2) his actions were within the scope of his employment or office" and requires a primary violation of the CEA in the first instance. In re Platinum & Palladium, 828 F. Supp. 2d at 599; see also Guttman v. CFTC, 197 F.3d 33, 39 (2d Cir. 1999). Therefore, to the extent common questions do not predominate the analysis of direct CEA claims, they also do not predominate the analysis of CEA vicarious liability claims.[107]

Additionally, regardless of whether plaintiffs may assert aiding-and-abetting claims against Rabobank, see LIBOR IV, 2015 WL 6243526, at *49, slip op. at *121-24, our predominance analysis does not meaningfully differ between direct liability and aiding-and-abetting. Aiding-and-abetting claims, to the extent properly asserted, are also contingent on a primary CEA violation. See In re Platinum & Palladium, 828 F. Supp. 2d at 599 ("In order to recover damages from a secondary party in an action for 'aiding and abetting' liability under the Commodities Exchange Act, a plaintiff must first prove that a primary party committed a commodities violation." (quoting Tatum v. Legg Mason Wood Walker, Inc., 83 F.3d 121, 123 (5th Cir. 1996) (per curiam)); see also In

[107] Rather, analyzing vicarious liability will likely introduce further individual questions, such as the agent's scope of employment, which are likely to differ from trader to trader and from bank to bank.

re Commodity Exch., Inc. Silver Futures & Options Trading Litig., 560 F. App'x 84, 87 (2d Cir. 2014) ("As plaintiffs failed to allege a CEA violation, their aiding and abetting claim was properly dismissed as well.").

3.5.1. **Ability to Influence EDF Prices**

The first element in this case, "the ability to influence market prices" presents a two-part question: whether a panel bank has the ability to impact published LIBOR and whether a panel bank has the ability to impact EDF prices. As we concluded in our analysis of commonality under Rule 23(a)(2), the former is a common question. It is of limited significance, however, as the calculation is rather straightforward and not particularly intensive.[108] The ability to impact EDF prices, however, is an individual question. We view this issue as closely related to the third and fourth elements of a CEA claim (existence and causation of an artificial price, respectively), and we analyze them below.

3.5.2. **Intent to Influence EDF Prices**

We find intent to be an individual question. Because trader-based manipulation occurs on a day-by-day basis and is inherently episodic, evidence of a trader's intent on one day will not be "central to the validity of each one of the claims" asserted by

[108] We note that the parties agree as to the days on which Rabobank's LIBOR submission could have affected published LIBOR, though the fact of agreement does not figure into the predominance analysis. Cf. In re Nassau Cty, 461 F.3d at 227 ("[A] concession does not eliminate a common issue from the predominance calculus.").

the class when those claims arise from manipulation on different dates. Dukes, 564 U.S. at 350. That is, evidence of a trader's intent on one day, standing alone, would not "suffice for each [class] member to make a prima facie showing" of intent on other dates; more will be required. Tyson Foods, 136 S. Ct. at 1045 (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:50 (5th ed. 2012)). Therefore, even assuming that intent is properly determined based on "a person's actions and the totality of the circumstances" as Exchange plaintiffs suggest, In re DiPlacido, CFTC No. 01-23, 2008 WL 4831204, at *27 (Nov. 5, 2008), evidence of intent on one day will be only minimally probative of intent on other days.

In arguing that intent is a common question, Exchange plaintiffs cite our prior holding that "[b]ecause plaintiffs may be able to make such a showing through common proof, intent does not present an inherently individual issue, much less one that necessarily predominates over common issues." (Exch. Pls.' TBM Reply 14-15 (citing May 13, 2016 Order, 2016 WL 2851333, at *3, slip op. at *9).) This argument distorts our prior holding, and Exchange plaintiffs' reliance is misplaced. We reasoned -- in the context of OTC plaintiffs' suppression claims -- that intent was not "an inherently individual issue" because OTC plaintiffs "may prove intent by focusing on the alleged manipulation of LIBOR." May 13, 2016 Order, 2016 WL 2851333, at *3, slip op. at *8 (emphasis

added). In so holding, we relied on LIBOR III's articulation of pleading standards for the OTC plaintiffs' contract claims. See LIBOR III, 27 F. Supp. 3d at 482-83, slip op. at *69-71 (discussing OTC plaintiffs' claims based on the implied covenant of good faith and unjust enrichment). These differences are meaningful, as Exchange plaintiffs not only must establish intent to manipulate market prices of EDFs and not LIBOR, but also assert trader-based claims considerably different in nature from OTC plaintiffs' claims (and their own claims) of persistent suppression.[109]

3.5.3. Existence and Causation of Artificial EDF Prices

In order for the existence of artificial EDF prices and Rabobank's causation of those artificial prices to be common questions, Exchange plaintiffs must establish that classwide methodologies are available to determine (1) what LIBOR submissions panel banks would have made (and by extension, what LIBOR would have been) absent trader-based manipulation and (2) what impact a change from actual published LIBOR to but-for published LIBOR would have had on EDF prices. They have done neither.

To satisfy the first requirement, Exchange plaintiffs rely on Dr. Seyhun's Rebuttal Period 0 model, which they assert produces

[109] Our conclusion that intent is an individual question implies that Rabobank's asserted personal jurisdiction defense similarly poses an individualized question. See LIBOR V, 2015 WL 6696407, at *19-20, slip op. at *50-54 (discussing the significance of intent in assessing personal jurisdiction).

"estimate[s] of what LIBOR submissions would have been absent TBM -- for each panel bank on the dates during Period 0 for which there exists documented evidence of TBM." (Exch. Pls.' TBM Reply 15.)

For the reasons articulated in our exclusion of Dr. Seyhun's opinions under Daubert, this model is insufficient to meet Exchange plaintiffs' burden. See supra section III.1.1.1. Dr. Seyhun's Rebuttal Period 0 Model does not reliably identify the magnitude of trader-based manipulation and frequently contradicts Exchange plaintiffs' allegations regarding the direction of manipulation.[110] But even if we had not deemed the Rebuttal Period 0 model inadmissible, we would conclude that its heavy reliance on documentary corroboration defeats any suggestion that it is a classwide methodology. A detailed examination of trader communications, which necessarily pertain to a single date or a limited number of days, will in turn relate only to class members with net trading positions on those days and not all class members. Indeed, we note that in a summary table identifying documentary evidence of trader-based manipulation that Exchange plaintiffs submitted in support of class certification, no document appears

[110] We also reject Exchange plaintiffs' assertion that "[t]o the extent Rabobank challenges the models as insufficient, its defense applies to the Class as a whole." (Exch. Pls.' TBM Reply 16). Dr. Seyhun's models form part of Exchange plaintiffs' affirmative case, and they must carry the burden of establishing a classwide methodologies to calculate but-for LIBOR submissions and but-for published LIBOR. Rabobank's assertion that Dr. Seyhun's models are flawed is therefore not an affirmative defense, but a failure in Exchange plaintiffs' prima facie case. Indeed, taken to its natural conclusion, Exchange plaintiffs' argument would return us to the days when "an expert's report will sustain a plaintiff's burden so long as it is not 'fatally flawed,'" a notion the Second Circuit disavowed in In re IPO. See 471 F.3d at 40.

to pertain to manipulation by more than one bank or by the same bank on more than five days. (Decl. of Thomas Elrod ¶ 203, May 2, 2017, ECF No. 1890.)

To satisfy the second requirement, Exchange plaintiffs rely on Dr. Seyhun's "impact factor" models, which purport to estimate "the impact of TBM on EDF prices." (Exch. Pls.' TBM Reply 17.) Again, our exclusion of those models under Daubert dictates the conclusion that Exchange plaintiffs have not established that impact of changes in LIBOR on EDF prices is a common question. Macroeconomic events impact both LIBOR and EDF prices (as Exchange plaintiffs have conceded), and Dr. Seyhun's model is incapable of parsing the effects of those events from the effect of changes in LIBOR itself. But even if this flaw were insufficient to render Dr. Seyhun's impact factor models inadmissible under Daubert, a mismatch would remain between Exchange plaintiffs' theory of harm and impact on EDF prices (and by extension, damages), as measured by Dr. Seyhun's models.[111] Exchange plaintiffs have never alleged an entitlement to recover for damages incurred as a result of macroeconomic events (nor could they plausibly do so), and Dr. Seyhun's impact factor models therefore "fail[] to measure damages resulting from the particular . . . injury on which [plaintiffs'] liability in this action is premised." Comcast, 569 U.S. at 36.

[111] We would also find more compelling Dr. Culp's extensive findings that changes in LIBOR do not cause determinable changes in EDF prices.

Further, even assuming that any change in EDF prices caused by a change in LIBOR may be isolated and measured, the issue of the minimum price increments in which EDFs trade (or "tick sizes") precludes the conclusion that the existence and causation of artificial prices are common questions. Exchange plaintiffs have offered no methodology to determine when a particular trade would have been impacted by changes in LIBOR: rather, Dr. Seyhun and Dr. Netz each offer probabilistic opinions that are incapable of making such a determination. (Seyhun Rebuttal Report ¶ 216; Netz Initial Report 38.) Contrary to the suggestion that Dr. Seyhun's probabilistic formula (which divides artificiality on a given day by the minimum price increment)[112] is "a methodology to determine when [a change in LIBOR] in fact affected EDF prices" (Exch. Pls.' TBM Reply 19 n.33), the output of this formula is a probability, not a concrete yes-or-no answer (Seyhun Rebuttal Report ¶ 216).

Indeed, Exchange plaintiffs' subsequent argument, that this formula establishes that tick size "will either nullify the effect of LIBOR artificiality on the day in question, or amplify it," demonstrates the formula's very weakness. (Exch. Pls.' TBM Reply 19 n.33.) Of course, if the tick size "nullif[ies] the effect of LIBOR artificiality" on a given day (which will occur with a certain probability per Dr. Seyhun and Dr. Netz), Exchange plaintiffs will have failed to establish both the existence of

[112] Dr. Netz offers the same formula. (Netz Initial Report 38.)

artificial prices and Rabobank's causation of those prices on that day. Exchange plaintiffs' argument, therefore, is tantamount to a concession that Dr. Seyhun's models cannot (even setting aside the causation question) methodically separate instances when artificial EDF prices existed as a result of LIBOR manipulation and when they did not.

3.5.4. Damages

Finally, we consider the issue of damages. The question of damages, to some extent, is necessarily individual in every securities case, because damages will almost always be a function of the specific transactions undertaken by each class member and the prices and quantities involved in those transactions. Accordingly, "individualized damages determinations alone cannot preclude certification under Rule 23(b)(3)," Roach, 778 F.3d at 409, though "the fact that damages may have to be ascertained on an individual basis is . . . a factor that we must consider" in the predominance analysis, id. at 408 (omission in original) (quoting McLaughlin, 522 F.3d at 231).

In analyzing damages, we first consider the netting principles to be applied and whether they introduce individual issues. Though we may set forth at class certification the netting principles to be applied, see, e.g., In re Vivendi Universal, S.A. Sec. Litig., 284 F.R.D. 144, 159 (S.D.N.Y. 2012) (prescribing, at

class certification, "the netting methodology to be employed"),[113] we need not finalize any netting principles in order to find that they do. Exchange plaintiffs appear to reject any netting requirement, but we conclude that some degree of netting will be appropriate here. As we have discussed, "a plaintiff both injured and enriched by illegal activity cannot choose to recover for his injuries yet retain his windfall." Minpeco, 676 F. Supp. at 488. We acknowledge that "netting of gains and losses is not a hard-and-fast rule," as "[c]ourts decline to net where doing so would 'unjustly enrich' the defendant, 'shelter it from any appreciable liability,' or 'undermine the goal of deterrence.'" Gordon, 92 F. Supp. 3d at 202 (citing Apex Oil, 744 F. Supp. at 55); cf. Randall v. Loftsgaarden, 478 U.S. 647, 663-64 (1986) (rejecting, in a securities fraud case, the netting of tax benefits received by investors against their losses). Nonetheless, "[t]here is no unjust enrichment where a claimant has actually benefited from the alleged wrongdoing of another," Apex Oil, 744 F. Supp. at 55, and

[113] Exchange plaintiffs' contentions to the contrary are simply incorrect. Neither Apex Oil Co. v. DiMauro, 744 F. Supp. 53 (S.D.N.Y. 1990), nor Minpeco, 676 F. Supp. 486, were class actions, and In re Lidoderm Antitrust Litigation, No. 14-md-2521-WHO, 2017 WL 679367, at *17-18 (N.D. Cal. Feb. 21, 2017), held at most that the selection of but-for price and the final damages calculation are reserved for the trier of fact. Here, we consider how to interpret as a matter of law the "actual damages" language found in the text of the CEA, 7 U.S.C. § 25(a), see also In re Vivendi Universal, 284 F.R.D. at 159 (noting, in the securities fraud context, that "this Court has considerable discretion in determining how best to calculate compensable losses"), and whether that interpretation introduces individualized questions into the predominance analysis.

undeserved windfalls to plaintiffs may also be inappropriate, cf. Randall, 478 U.S. at 663.

In this case, netting across EDF trades will be required, at minimum.[114] Assuming that LIBOR manipulation had measurable price impact on EDFs, any EDF trading losses experienced by a class member resulting from that manipulation over the class period must be netted against any gains resulting from that manipulation over the class period. Those transactions were all undertaken as part of the same type of trading in LIBOR-based instruments undertaken by the class member, and unlike the unnetted tax benefits in Randall that "emerge[d] more as a function of the operation of the Internal Revenue Code's complex provisions" than the defendants' conduct at issue, 478 U.S. at 664, any nettable gains to a class member result from the "single wrong" of LIBOR manipulation.

Given this understanding of netting, we readily conclude that the damages inquiry in this case will be a highly individualized one. Indeed, each class member "will need to present evidence that varies from member to member" -- all of the EDF trades they undertook -- in order to determine whether it has suffered any damages. Tyson Foods, 136 S. Ct. at 1045 (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:50 (5th ed. 2012)). And unlike CEA cases in which centralized trading records may be

[114] We reserve judgment here as to whether more extensive forms of netting, such as cross-instrument netting (across different types of LIBOR-based instruments), will be necessary.

reasonably attainable, see, e.g., In re Amaranth, 269 F.R.D. at 372 (concerning manipulation of futures on NYMEX); In re Sumitomo Copper, 182 F.R.D. at 87 (same), no such records appear to exist in this case. We find Exchange plaintiffs' difficulties in obtaining centralized records to be informative, as they have subpoenaed the CME and 89 FCMs, all to little avail. The possibility that certain FCMs (panel bank affiliates or otherwise) may have retained some records, as suggested by counsel at oral argument (Hr'g Tr. 11:3-8; 12:12-13:2), is insufficient. Accordingly, even to the extent a common formula to calculate damages is available, the question of the data to which that formula will be applied remains. The latter will require evidence that varies from class member to class member, even if the formula is the same.[115] Damages are accordingly an individual question.

3.5.5. Conclusion

In this action, common questions do not predominate over individual ones. While the proposed trader-based class certainly raises a common question as to Rabobank's ability to impact LIBOR, this common question is outnumbered and substantially outweighed by individual questions relating to whether Rabobank (or its traders) had intent to manipulate EDF prices, by how much LIBOR was manipulated (if at all), what impact that manipulation

[115] To the extent Exchange plaintiffs claim that damages should be defined to include the time-value of money in their margin accounts (Netz Initial Report 46-47), doing so would introduce additional individualized questions as to each class member's margin requirements and cost of capital.

ultimately had on EDF prices, and by how much each individual class member was damaged. The proposed class therefore does not satisfy, and does not come close to satisfying, Rule 23(b)(3)'s predominance requirement.

3.6. Superiority

Rule 23(b)(3)'s superiority inquiry asks whether class status would be superior to the maintenance of individual actions. Our analysis is guided by the four factors set forth in Rule 23(b)(3), see Sykes, 780 F.3d at 81, though the factors are not exclusive.

First, we find that class members have a strong interest in controlling the prosecution of separate actions, given the extent of conflicting interests we have identified. See Fed. R. Civ. P. 23(b)(3)(A). Though this case unquestionably presents complex issues, we find that individual actions would allow individual plaintiffs to better tailor the necessary inquiries into potential trader-based manipulation to the days on which they had net trading positions and would not require them to assert that certain instances of trader-based manipulation occurred when those instances either do not pertain to them at all or would actively reduce their recovery.

Exchange plaintiffs' point that many class members may have "negative value" claims (where the cost of prosecuting an individual action would greatly outweigh any recovery) has some force, and we agree that class members may lack incentive to pursue

individual actions to at least some extent. Nonetheless, we view this case as easily distinguishable from cases such as consumer class actions, in which class members allege harm that is small in magnitude but generally certain in existence. By contrast, the two-sided, zero-sum nature of the EDF trading market involved in this case likely results in many EDF traders not having been harmed (or having benefited outright) from any EDF price impact caused by LIBOR manipulation.

That is, we should distinguish "negative" value claims -- those in which the cost of prosecution exceeds recovery -- from truly negative value claims -- those in which the class member actually benefited from the conduct in question. To the extent a putative class includes a substantial number of members who were not ultimately damaged, the "negative" value rationale for superiority advanced by Exchange plaintiffs is properly evaluated against a concern regarding the in terrorem effect that a certified class may have. Cf. Kohen II, 571 F.3d at 677-78 ("A related point is that a class should not be certified if it is apparent that it contains a great many persons who have suffered no injury at the hands of the defendant, if only because of the in terrorem character of a class action." (citations omitted)); Newton v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 259 F.3d 154, 190 192 (3d Cir. 2001) (observing, in a case where "at least some of the plaintiffs have not suffered economic injury," that "class

certification would place hydraulic pressure on defendants to settle which weighs in the superiority analysis"). That appears to be the case here, and we accordingly conclude the first Rule 23(b)(3) factor weighs against superiority.

Second, we find that the extent and nature of any litigation already begun by class members weighs in favor of superiority. See Fed. R. Civ. P. 23(b)(3)(B). We base this finding on the fact that this case is rapidly approaching its seventh birthday, having journeyed up and down the appellate ladder in the process. See, e.g., Gelboim v. Bank of Am. Corp., 135 S. Ct. 897 (2015); Schwab, 2018 WL 1022541; Gelboim, 823 F.3d 759.

Third, we find that "the desirability . . . of concentrating the litigation of claims" in this forum tips in neither direction. Fed. R. Civ. P. 23(b)(3)(C). On the one hand, for the reasons identified by the Judicial Panel on Multidistrict Litigation (JPML) in creating the multidistrict litigation in this district, concentrating litigation in this district may be desirable. See In re LIBOR-Based Fin. Instruments Antitrust Litig., 802 F. Supp. 2d 1380, 1381 (J.P.M.L. 2011). Further, though individual actions advancing theories similar to those offered by Exchange plaintiffs here would likely be transferred to this forum given this case's multidistrict litigation status, this transfer would be limited to pretrial proceedings and we would be required to return any individual actions not initially filed in this district to the

transferor court for trial. See Lexecon Inc. v. Milberg Weiss Bershad Hynes & Lerach, 523 U.S. 26, 28 (1998).

On the other hand, the res judicata issues identified by Rabobank do counsel against concentrating litigation in this district. See In re Vivendi, 838 F.3d at 264 ("Concerns about foreign recognition of our judgments are reasonably related to superiority."); see also Bersch v. Drexel Firestone, Inc., 519 F.2d 974, 996-97 (2d Cir. 1975) (Friendly, J.) (identifying foreign non-recognition of a class action's preclusive effect as a concern), abrogated on other grounds by Morrison v. Nat'l Austl. Bank Ltd., 561 U.S. 247 (2010). Indeed, named plaintiffs FTC Futures Fund PCC and FTC Futures Fund SICAV are also foreign entities, being based in Gibraltar and Luxembourg, respectively. (Corrected 4AC ¶¶ 26-27.) These named plaintiffs and Metzler's status as foreign entities does not preclude them from serving as class representatives, but the presence of a significant number of foreign putative class members gives us pause on whether concentration here is desirable.

Finally, our manageability conclusion follows largely from our findings on predominance. See 2 William B. Rubenstein, Newberg on Class Actions § 4:74 (5th ed.) (Westlaw 2017) ("[A] finding of non-predominance is easily paired with a finding that a class action is unmanageable and hence not a superior form of litigation."). We find that a class action would be unmanageable

given the extent of conflict between class members and the substantial individual questions of intent, causation, and damages.

In sum, we find that Exchange plaintiffs have not established that a class action would be superior to the maintenance of individual actions. While the second Rule 23(b)(3) supports a finding of superiority, the remaining factors are neutral or weigh against such a finding.

3.7. Modification of the Class Definition

Perhaps recognizing certain weaknesses in the class definition as proposed, Exchange plaintiffs suggest that two modifications to the class definition may be appropriate to salvage a class in some form: the removal of "were harmed" and the creation of day-by-day subclasses. We consider each suggestion in turn.

3.7.1. Removal of "Were Harmed"

Exchange plaintiffs suggest that any defects resulting from the inclusion of "were harmed" in the class definition could be resolved by our sua sponte modification of the class definition to exclude "were harmed." Such modification, however, would be without prejudice to subsequent modification in order to include instances of trader-based manipulation on additional days once discovered.[116] (Exch. Pls.' TBM Reply 8.)

[116] Of course, based on the class standing requirements that we have previously set forth, some showing that at least one named plaintiff held a net trading position adversely impacted by trader-based manipulation would be required before the class definition could be so modified.

We decline to exercise our discretion to modify the class definition here. First, Exchange plaintiffs have been on notice of the potential fail-safe class definition issue presented by their proposed definition for more than a year, when we expressed concern that "[s]uch a class necessarily raises individual questions, as the factfinder must determine whether an individual has a claim in order to determine whether he or she belongs in the class." May 13, 2016 Order, 2016 WL 2851333, at *2, slip op. at *4. Though we explicitly held that "[Exchange] plaintiffs will bear the burden of articulating a class definition that meets the requirements of Rule 23" at class certification, id. at *1, slip op. at *3, they have insisted on offering the same class definition. We are accordingly disinclined to afford Exchange plaintiffs any potential benefit that would result from modification.

Second, when we contemplated the possibility of modifying the class definition, we reasoned that "[t]he precise scope of [Exchange] plaintiffs' claims will presumably be clarified by the completion of class discovery." Id. Class discovery has been completed, but the scope of Exchange plaintiffs' claims has not been significantly clarified. Exchange plaintiffs continue to suggest that an unknown number of unknown instances of TBM have yet to be uncovered.

Finally, and most significantly, modification of the class definition would be futile. Because Exchange plaintiffs suggest modification without prejudice to the inclusion of additional instances of trader-based manipulation, the adequacy of representation issues identified above remain: class members, based on their trading positions, have conflicting incentives as to the discovery of those additional instances and to their inclusion in subsequent modifications of the class definition. And even if the class definition were ultimately limited to the 13 dates specified in the current definition, such a modification would not meaningfully alter the predominance analysis such that we would conclude that common questions predominate.[117]

3.7.2. Day-by-Day Subclasses

In a footnote in reply, Exchange plaintiffs assert that the creation of "single-day subclasses would meet Rule 23(b)(3)'s requirements" if a broad class corresponding to the entire class period were not certified. (Exch. Pls.' TBM Reply 13-14 n.26.) The creation of day-by-day subclasses may address some of the typicality and adequacy of representation issues that we have identified, but would not sufficiently alter the predominance calculus such that common questions would predominate.

[117] For this reason, we would also reject any suggestion that issue certification under Rule 23(c)(4) would be appropriate in this case: issue certification "would not materially advance the litigation because it would not dispose of [these] larger issues." McLaughlin, 522 F.3d at 234.

Further, under Rule 23(b)(3)'s superiority prong, day-by-day subclasses are likely to become sufficiently numerous to render a class action utterly unmanageable. Even based on the current proposed class definition, day-by-day subclasses would require the creation of thirteen subclasses within the trader-based class, and the possibility that additional instances of trader-based manipulation beyond those currently identified (a point that Exchange plaintiffs have repeatedly emphasized) necessarily entails the likely creation of even more subclasses. For example, one declaration submitted by Exchange plaintiffs lists 62 dates in its "Timeline of Panel Bank Defendants' Trader-Based Manipulation of LIBOR," (Decl. of Thomas Elrod ¶ 203, May 2, 2017, ECF No. 1890), and Dr. Netz considers evidence of 163 instances of trader-based manipulation (Netz Initial Report 29-31).[118]

While Rule 23(c)(5) unquestionably allows for the creation of subclasses "[w]hen appropriate," we find little appropriate about the establishment of dozens, if not hundreds, of subclasses. Cf. Manual for Complex Litigation § 21.23 (4th ed. 2004) ("The creation of a number of subclasses . . . may make the case unmanageable [and] may defeat the superiority requirement."). As the Second Circuit remarked about the possibility of seven separate subclasses, "[t]hat is surely beyond the point at which

[118] Mr. Beevers also opines that there are "potentially likely" thousands of instances of trader-based manipulation. (Beevers Initial Report ¶ 117.)

[subclassing] must end." In re Literary Works, 654 F.3d at 257. So too here.

3.8. Conclusion

Exchange plaintiffs' motion for certification of a trader-based class is denied. We find that the proposed class meets the numerosity and commonality requirements of Rule 23(a) and the implied requirement of ascertainability, but fails to meet the typicality and adequacy requirements of Rule 23(a) and the predominance and superiority requirements of Rule 23(b)(3). We decline Exchange plaintiffs' invitations to exercise our discretion to modify the class definition. Omitting "were harmed" from the class definition would do little to ameliorate the predominance and superiority problems from which the proposed class suffers, and even to the extent that day-by-day subclasses would resolve the typicality and adequacy of representation problems that we identify above, they would not tip the predominance balance and would additionally create intractable management problems.

4. Suppression Class

A suppression class, to the extent one is certified, would consist of (1) traders purchasing EDF contracts with less than 365 days to expiration between April 15, 2009 and May 17, 2010 (Period 3) as specified in subpart C.2 of the class definition and (2) traders who transacted in EDF contracts or options during Period

3 and "were harmed" as a result of LIBOR suppression, which corresponds to subpart C.1 of the class definition.[119] Because antitrust claims are no longer at issue in this action, subpart A and the pre-Period 3 claims it encompasses are no longer figure into the class certification analysis -- a point the parties acknowledged at oral argument. (Hr'g Tr. 25:10-21.) Accordingly, in the remainder of our analysis of the proposed suppression class, we will consider only Period 3 CEA claims.

Before proceeding to the analysis of the proposed suppression class, we consider another preliminary issue: the impact of Rabobank's Daubert motions. While Rabobank moved to exclude the opinions offered by Exchange plaintiffs' experts in the trader-based context, UBS did not. Nonetheless, to the extent that we have granted Rabobank's Daubert motions and excluded certain opinions offered by Exchange plaintiffs' experts, we will not consider those opinions as evidence in our analysis of the suppression class's compliance with Rule 23. After all, Rule 702 of the Federal Rules of Evidence establishes threshold requirements that an expert opinion must satisfy before that opinion may be considered; nothing in the Rule suggests that expert

[119] Subpart C.1 is therefore redundant of the class definition's prefatory language, which refers to any individual that transacted in EDFs during the Class Period. Because CEA claims based on trades in Period 1 and Period 2 are untimely, see LIBOR IV, 2015 WL 6243526, at *116-17, slip op. at *279-81 (citing LIBOR III, 27 F. Supp. 3d at 471-77, slip op. at *40-56), subpart C.1 and the prefatory language capture the same set of putative class members once the CEA statute of limitations is considered.

testimony offered for the same purpose that is determined to be insufficiently reliable in one context (or as to one defendant) may somehow become cured of that reliability flaw in another context (or as to another defendant).

4.1. Class Definition

At the outset, UBS criticizes the class definition's use of "were harmed," contending that the proposed class amounts to an impermissible fail-safe class. (UBS Suppr. Opp'n 11-13.) While Exchange plaintiffs' use of "were harmed" is initially ambiguous, they subsequently clarify that a class member is "harmed" by suppression if it: (1) "purchased an EDF contract when prices were artificially inflated"; (2) "sold an EDF contract when prices were artificially depressed"; (3) "purchased an EDF call option or sold an EDF put option when EDF prices were artificially inflated"; or (4) "sold an EDF put or call option when EDF prices were artificially depressed." (Exch. Pls.' Suppr. Reply 29.) This fourth criteria, as currently formulated, directly conflicts with the third criteria; we assume Exchange plaintiffs meant to say "sold an EDF put <u>option</u> or <u>purchased an EDF</u> call option when EDF prices were artificially depressed."

Such clarity would have been helpful at the outset, but we find no reason not to analyze the proposed class using the definition of "harmed" set forth in Exchange plaintiffs' reply. Exchange plaintiffs suggest that criteria (2) and (4) were never

triggered during the suppression period as a categorical matter because LIBOR was strictly suppressed, but even Dr. Seyhun finds that actual published LIBOR sometimes exceeded but-for LIBOR. (Seyhun Rebuttal Report figs.14.1-14.17.) Accordingly, we interpret "harmed" to include all four criteria.[120]

4.2. Ascertainability

UBS, in its brief submitted prior to the Second Circuit's decision in In re Petrobras, argued that Exchange plaintiffs' difficulties in obtaining trading records render the proposed class unascertainable on account of administrative infeasibility. (UBS Suppr. Opp'n 13-14.) As with Rabobank's ascertainability arguments, we conclude that In re Petrobras's rejection of an administrative feasibility requirement deprives these arguments of persuasive force. See 862 F.3d at 268-69. As with the trader-based subclass, we conclude that the suppression-based subclass is ascertainable under In re Petrobras's standard: the proposed class definition incorporates objective and definite criteria that limit the class based on the dates and types of trades in which members engaged. See supra section III.3.3.

4.3. Rule 23(a)

UBS does not dispute that the proposed persistent-suppression class satisfies Rule 23(a)(1)'s numerosity requirement and Rule

[120] This class definition continues to satisfy Article III standing requirements, given the relaxed definition of Article III "injury-in-fact" established by the Second Circuit in Denney. See 443 F.3d at 263-64.

23(a)(2)'s commonality requirement. We similarly conclude that these requirements are satisfied. As with the trader-based subclass, we find that the evidence regarding the number of "large traders" who traded on the CME during the suppression period (which includes Period 3) is sufficient to establish that the proposed class more likely than not contains at least 40 members and accordingly satisfies the numerosity requirement. See supra section III.3.4.1. We also conclude that the question of whether panel bank suppressed LIBOR by making artificially low submissions throughout the suppression period is a common question, as evidence sufficient for one class member to establish that the panel bank did so will be sufficient for all other class members.[121]

4.3.1. Typicality

UBS argues that the named plaintiffs' claims are not typical of the class's because class members hold "hopelessly conflicting interests." (UBS Suppr. Opp'n 25.) Under this theory, class members have differing incentives to establish the magnitude of suppression on a given day based on the trading positions they held on that day. In response, Exchange plaintiffs contend that the named plaintiffs and absent class members' claims involve "common questions of law . . . and the same course of conduct." (Exch. Pls.' Suppr. Reply 33-34.)

[121] Though no antitrust claims remain in this action, this question is similar to the question of whether a conspiracy to suppress LIBOR existed, and "allegations of the existence of a price-fixing conspiracy" are often "susceptible to common proof." Cordes & Co., 502 F.3d at 105.

We conclude, as we do in the trader-based context, that 303030 Trading and Metzler's claims are not typical of the class's. 303030 Trading remains subject to the unique defense that its claims were not validly assigned to it,[122] and the lack of clarity as to the legal status of Metzler's funds renders its claims atypical in this context as well. Additionally, we conclude that named plaintiff Gary Francis's claims are atypical, as the evidence shows that over Period 3, Francis had no net trading position and Dr. Seyhun's methodologies would show that he ultimately benefited from LIBOR suppression.[123] (Ordover Initial Report ¶¶ 144-46, tbl.24.)

Accordingly, only Atlantic Trading, the two FTC Futures Fund entities, and Nathanial Haynes remain. As to these named plaintiffs, we conclude that their claims are typical of the class's. Their claims, along with the absent class members' claims, arise generally from the same course of events: the alleged pattern of suppressing LIBOR submissions motivated by reputational concerns. Unlike the episodic nature of trader-based manipulation alleged in the trader-based class that animated our concerns as to

[122] Additionally, 303030 Trading appeared to have no produced no records corresponding to trades in Period 3. (Ordover Initial Report ¶ 137, tbl.22.)

[123] Based on Dr. Ordover's analysis, we would reach a similar conclusion regarding named plaintiffs FTC Futures Fund PCC and FTC Futures Fund SICAV if all FTC Futures Fund entities were properly considered together. (Ordover Initial Report ¶¶ 132-34, tbl.21.) However, the two FTC Futures Fund named plaintiffs appear to be separate legal entities -- one incorporated in Gibraltar and one incorporated in Luxembourg (Corrected 4AC ¶¶ 26-27) -- and we cannot discern whether either or both actually benefitted from LIBOR suppression.

class standing and typicality, the LIBOR suppression alleged here is inherently persistent and can be reasonably characterized as a single course of conduct by each panel bank. We therefore conclude, for this subset of named plaintiffs, that their claims are typical of the class's claims.

4.3.2. Adequacy of Representation

In challenging adequacy of representation, UBS relies on the same conflicting-interest argument supporting its typicality challenge. (UBS Suppr. Opp'n 25.) Exchange plaintiffs respond that "[a]ll Plaintiffs have an interest in proving the maximum claim against Defendants," and that conflicts, to the extent they exist, are therefore not sufficiently serious to justify a finding of inadequacy of representation. (Exch. Pls.' Suppr. Reply 34-35.)

UBS correctly asserts that because Exchange plaintiffs not only held different trading positions over the class period but have also offered multiple models yielding different estimates of suppression, conflicts between class members will arise because different class members will prefer different models that maximize their recovery. Exchange plaintiffs' suggestion that "[n]o Plaintiff controls, or wants to control, the price artificiality in the expert reports," (Exch. Pls.' Suppr. Reply 35), is simply incorrect, in light of the numerous models they have offered. Each plaintiff certainly has in interest in maximizing its claim against

defendants, but Exchange plainitffs' response ignores entirely the difficulty that UBS correctly identifies.

Nonetheless, in the suppression context, we find that the conflicts created by class members' conflicting trading positions and disparate preferences for one but-for LIBOR model over others do not rise to the level of "fundamental" conflicts that preclude a finding of adequacy of representation. A comparison to the trader-based class, and the fundamental conflict that we identified there, is again illustrative. Unlike that class, where Exchange plaintiffs have left open the possibility of additional instances of trader-based manipulation of unknown direction and magnitude, the contours of Exchange plaintiffs' suppression claims are far more clearly defined. See supra section III.3.4.4. The open-ended nature of the trader-based claims significantly amplified the conflicts generated by disparate trading positions and competing models in that context; those enhancements are not present here. We accordingly conclude that adequacy of representation is satisfied.

4.4. Predominance

We analyze predominance with respect to plaintiffs' suppression-based CEA claims using the same four elements that we considered with respect to Exchange plaintiffs' trader-based claims: "(1) that defendant had the ability to influence market prices; (2) that he specifically intended to do so; (3) that

artificial prices existed; and (4) that defendant caused the artificial prices." LIBOR I, 935 F. Supp. 2d at 713, slip op. at *94-95 (alterations incorporated).[124] As before, EDFs remain the commodity in question. See LIBOR II, 962 F. Supp. 2d at 612, slip op. at *6-7; LIBOR I, 935 F. Supp. 2d at 721, slip op. at *115-16.

4.4.1. Intent to Influence EDF Prices

Exchange plaintiffs must establish specific intent to influence market prices, which in this action requires a showing of intent to manipulate EDF prices. Because EDFs are the commodity in question and not LIBOR, we again conclude that the question of intent to manipulate EDF prices is an individual question.

Evidence going towards panel banks' intent to manipulate LIBOR will generally apply throughout the suppression period and therefore pertain to all class members. A panel bank suppressing its LIBOR submission on one day based on reputational concerns is likely to have done so the day before and is likely to have done so the day after, as its reputational concerns are unlikely to materialize and disappear entirely from day to day over the financial crisis and suppression period. Accordingly, evidence showing that a panel bank possessed or lacked a reputation-based intent to suppress LIBOR on one day will be highly probative of

[124] We again subsume our consideration of the first element, panel banks' ability to influence market prices, into the third and fourth elements, the existence of and panel banks' causation of artificial prices.

that bank's intent (or lack thereof) throughout the suppression period. Indeed, if the critical inquiry were whether panel banks had intent to manipulate LIBOR, we would conclude that it is a common question weighing in favor of a finding of predominance.

But it is not, and the common nature of the question of intent to manipulate LIBOR does not translate to the EDF context. Establishing intent to manipulate EDF prices through reputation-motivated suppression of LIBOR is at least somewhat paradoxical, and we have considerable difficulty imagining what evidence tending to show (or disprove) such intent would even look like, let alone whether that evidence would pertain to all class members or only a few. To the extent we can even conceive of any such evidence, that evidence would more closely resemble the individualized, day-specific, panel bank-specific evidence that Exchange plaintiffs rely on in the trader-based context than the broadly scoped evidence pertaining to a panel bank's suppression of LIBOR submissions based on an intent to protect its reputation. We accordingly conclude that the question of specific intent to influence EDF prices through reputation-driven suppression of LIBOR is an individual question.[125]

4.4.2. Existence and Causation of EDF Prices

[125] Further, even if LIBOR suppression were motivated by financial incentives like trading profits, intent to manipulate EDF prices would still need to be distinguished from intent to manipulate prices of other LIBOR-based instruments not at issue in this action.

As in the context of trader-based manipulation, Exchange plaintiffs must establish by a preponderance of the evidence that classwide methodologies are available to determine both but-for LIBOR and how the difference between but-for LIBOR and actual LIBOR would have impacted EDF prices.[126] They again have done neither.

Exchange plaintiffs rely on Dr. Seyhun's ICAP-Ask-based models and his Rebuttal Suppression Model to meet this burden. (Exch. Pls.' Suppr. Reply 3-10.) This question is closer than in the trader-based context because the suppression class considers across-the-board suppression during the later portions of the class period, which by construction is one-directional. Nonetheless, given that we have excluded Dr. Seyhun's opinions to this effect under Daubert, they are insufficient. See Laumann v. Nat'l Hockey League, 105 F. Supp. 3d 384, 398–99 (S.D.N.Y. 2015) ("Here, [the expert's] model was the common evidence -- and the model has been excluded. Therefore, no [Rule 23](b)(3) class may be certified."). Nonetheless, we discuss here two further

[126] In asserting that they have met these requirements, Exchange plaintiffs criticize Dr. Willig's opinions and assert, mystifyingly, that "Defendant-friendly interpretations of emails or documents is inappropriate on the class motion as well as on summary judgment," citing cases in the summary judgment and directed verdict context. (Exch. Pls.' Suppr. Reply 4 & n.4.) In so contending, they have apparently forgotten that we are tasked with "assess[ing] all of the relevant evidence admitted at the class certification stage" and "resolv[ing] factual disputes relevant to each Rule 23 requirement." In re IPO, 471 F.3d at 41-42. Indeed, this objection is particularly difficult to understand in light of Exchange plaintiffs' subsequent argument that we should disregard Dr. Willig's opinions regarding the extent of suppression because they "[c]ontradict independent evidence." (Exch. Pls.' Suppr. Reply 7.)

criticisms of Dr. Seyhun's Rebuttal Suppression Model offered by UBS.

First, UBS asserts that Dr. Seyhun's reliance on the ICAP-Ask data series in his Rebuttal Suppression model fails to account for differences in credit risk between the broader category of prime banks underlying the ICAP-Ask data and LIBOR panel banks. (Defs.' Upstream Opp'n 19-20.) Exchange plaintiffs' rejoinder -- that Dr. Seyhun "does adjust his analysis to take account of each Defendant's credit worthiness" -- is entirely nonresponsive. (Exch. Pls.' Suppr. Reply 8.) UBS argues that the ICAP-Ask series on which Dr. Seyhun relies in his Initial ICAP-Ask Models and Rebuttal Suppression Models fails to account for differences in credit risk between panel banks and other prime non-panel banks, not differences in credit risk within panel banks.

Second, UBS contends that Dr. Seyhun's analysis of the relationship between CDS spreads and LIBOR submissions is flawed. (UBS Suppr. Opp'n 34-35.) Since, within the Rebuttal Suppression model, CDS spreads serve as an input to the Rebuttal Suppression model that Dr. Seyhun uses to control for differences in panel banks' LIBOR submissions attributable to differences in credit risk, the absence of a relationship between CDS spreads and LIBOR submissions suggests that the Rebuttal Suppression Model does not sufficiently control for differences in credit risk across panel banks.

According to UBS, Dr. Seyhun's regressions are based on an improper benchmark period that incorporates pre-Class Period CDS spread data, even though Dr. Seyhun himself suggests that inclusion of pre-Class Period CDS spread data is inappropriate. (Seyhun Rebuttal Report ¶¶ 416-17.) Dr. Willig, in turn, determines that Dr. Seyhun's methodology would show no statistically significant relationship between a bank's LIBOR submission and its CDS spread when the pre-Class Period CDS spread data is omitted from Dr. Seyhun's regressions (Willig Rebuttal Report ¶¶ 6-12). Exchange plaintiffs respond that this critique is not "passably scientific" because Dr. Willig has not offered a justification for excluding pre-Class Period ICAP-Ask data from his analysis in addition to excluding the pre-Class Period CDS spread data disavowed by Dr. Seyhun. (Exch. Pls.' Suppr. Reply 8-9.)

This "passably scientific" critique demonstrates a failure to properly interpret Dr. Willig's report or a failure to understand econometrics. To the extent Exchange plaintiffs challenge Dr. Willig's analysis of the LIBOR submission-CDS spread relationship presented in the Seyhun Initial Report, that analysis did not rely on ICAP-Ask data. (Seyhun Initial Report tbl.2.5.) To the extent Exchange plaintiffs challenge Dr. Willig's discussion of the LIBOR submission-CDS spread analysis presented in the Seyhun Rebuttal Report, they fail to understand how regressions are conducted. In order to exclude the pre-Class Period CDS spread data (which Dr.

Seyhun acknowledges are uninformative), Dr. Willig changed the benchmark period, a change that necessarily applies to every time-series explanatory variable included in the regression. Here, that necessarily includes both the ICAP-Ask series and the multiple CDS spread series (corresponding to each panel bank) on which Dr. Seyhun relied. By construction, a regression does not incorporate time-series data from outside the benchmark period in order to estimate the relationship between the variables in question.

In sum, we conclude that Exchange plaintiffs have not established that the determination of what submissions each panel bank would have made in the absence of suppression is a common question. Each of the models relied upon by Exchange plaintiffs is insufficiently reliable, as we have concluded above, and their further defenses of Dr. Seyhun's Rebuttal Suppression Model are incoherent.

As to the second question, what impact changes in LIBOR would have had on EDF prices, we again conclude that the question is an individual one. Dr. Seyhun's and Dr. Netz's opinions remain inadmissible at the threshold under Daubert, but they would do little more to meet Exchange plaintiffs' burden even if they were admissible. Dr. Seyhun's "impact factor" models remain confounded by macroeconomic variables, again resulting in a mismatch between Exchange plaintiffs' theory of harm and the impact on EDF prices that it calculates, a disparity that is impermissible under

Comcast. See 569 U.S. at 36. This flaw is no less fatal here than in the trader-based context. Further, Dr. Seyhun and Dr. Netz's probabilistic "tick size" opinions equally establish that Exchange plaintiffs cannot determine with any certainty which trades were in fact impacted by LIBOR manipulation, whether in the context of trader-based manipulation or in the context of suppression.

This conclusion as to the relationship between changes in LIBOR and changes in EDF prices is bolstered by evidence that while LIBOR is published only once each day, EDF prices fluctuate significantly within a trading day in magnitudes greater than day-to-day changes in LIBOR, and by evidence that EDF prices and LIBOR move in inconsistent directions.[127] (Ordover Initial Report ¶¶ 65-75.) We also find noteworthy Exchange plaintiffs' experts' acknowledgement that LIBOR and EDFs have a two-way causal relationship, an acknowledgement confirmed by at least one academic paper (cited by Dr. Seyhun and Dr. Netz) that measures information transfer in both directions from LIBOR to EDF prices and from EDF prices to LIBOR. Indeed, we interpret Dr. Seyhun's

[127] By "inconsistent," we mean in a direction inconsistent with Exchange plaintiffs' theory. Under their theory, a decrease in LIBOR should cause an increase in EDF prices, since EDF contracts ultimately settle at a price of 100 minus 3-month LIBOR published on the settlement date. We find, relying on Dr. Ordover's analysis, that changes in LIBOR are often observed together with corresponding changes in EDF prices in the same direction, which is inconsistent with Exchange plaintiffs' theory.

cointegration findings to be consistent with such a two-way causal relationship.

Exchange plaintiffs advance numerous additional arguments and identify further pieces of evidence in their attempt to establish that changes in LIBOR cause changes in EDF prices. We find them unpersuasive taken together, but discuss several specific arguments below. First, Exchange plaintiffs assert that "the EDF market's expectation today of what 3-month LIBOR will be at the EDF expiration is based upon today's LIBOR." (Exch. Pls.' Suppr. Reply 12.) This statement is true, but only to a limited extent: the evidence establishes that far more relevant than today's LIBOR is the market's expectations regarding macroeconomic conditions at expiration. Though LIBOR may capture some of those conditions and events, LIBOR does not itself form the basis of those expectations.

Second, Exchange plaintiffs' attempt to portray the lack of immediate response in EDF trading prices to the publication of LIBOR as a strength of their case rather than a weakness is incomprehensible. (Exch. Pls.' Suppr. Reply 12). Rather, the lack of response in EDF trading prices is more consistent with the proposition that changes in LIBOR do not necessarily cause measurable changes in EDF prices.

Equally unpersuasive are Exchange plaintiffs' arbitrage and "overlap" theories of causation. (Exch. Pls.' Suppr. Reply 14-15.) Dr. Seyhun and Dr. Netz do not articulate workable arbitrage

strategies, as LIBOR is not a tradable asset. (Ordover Initial Report ¶¶ 60-63.) And as we discussed in the context of Exchange plaintiffs' motion to exclude Dr. Culp's opinions, the overlap theory is nonsensical; this finding is confirmed by Dr. Ordover's analysis showing a lack of convergence between spot LIBOR and expected LIBOR at settlement implied by EDF prices as Dr. Seyhun's theory would require, despite increasing overlap between the time periods in question. (Ordover Rebuttal Report ¶¶ 5-15, figs.1-2.)

Finally, we are unpersuaded by Exchange plaintiffs' reliance on the "chronological sequence of events on April 16-18, 2008," (Exch. Pls.' Suppr. Reply 13), and evidence that some EDF traders took LIBOR into account when trading (Exch. Pls.' Suppr. Reply 13-14, 16). We previously found unpersuasive the April 16-18, 2008 example, see LIBOR VI, 2016 WL 7378980, at *22, slip op. at *57-59, and Exchange plaintiffs' additional gloss on that example does not cause us to reassess that conclusion. Again, EDF prices appeared to react to the announcement (that LIBOR appeared to have been suppressed) before LIBOR itself increased in response to this announcement.

But even assuming we were to find this example at least somewhat persuasive, we are skeptical that a single example corresponding to three days of the class period -- days that we have identified as having particular significance -- that are

likely less than representative of the broader class period. See, e.g., LIBOR IV, 2015 WL 6243526, at *114-15, slip op. at *274-78. Similarly, evidence that some plaintiffs considered LIBOR in making their EDF trading decisions establish that changes in LIBOR would cause changes in EDF trading prices; such behavior is equally consistent with LIBOR serving as a proxy for the macroeconomic conditions and business events that Exchange plaintiffs concede drive both LIBOR and EDF prices.

4.4.3. Damages

We find, as we do for the trader-based class, that the question of damages is an individual question of significant magnitude, given the extensive difficulties plaintiffs have experienced in obtaining trading records and the netting requirements that will be imposed. See supra section III.3.5.4.

4.4.4. Conclusion

We ultimately conclude that Exchange plaintiffs have not established that common questions predominate over individual ones. The limited number of common questions are substantially outweighed by individualized questions of specific intent to manipulate EDF prices through reputation-motivated suppression of LIBOR, existence and causation of artificial EDF prices, and damages.

4.5. Superiority

We again analyze superiority using the Rule 23(b)(3) factors and again find a lack of superiority. First, favoring superiority, we find that class members lack a strong interest in controlling the prosecution of separate actions, even though we remain unmoved by the "negative value" argument advanced by plaintiffs for the reasons articulated in our analysis of this factor in the trader-based context and based on evidence showing that at least several of the named plaintiffs were not harmed by LIBOR suppression. See supra section III.3.6. The conflicts within the class, limited in significance by the one-directional nature of Exchange plaintiffs' allegations of suppression here, and the presence of only one separate action concerning LIBOR manipulation in the context of EDF trading persuades us that this factor tips in favor of superiority. Next, our analysis of the second and third factors remains unchanged from our analysis in the trader-based context. The extent and nature of litigation already begun weighs in favor of superiority; the desirability of concentrating litigation in this forum is neutral given the limitations on an MDL court's power and concerns about foreign non-recognition of a class action's preclusive effects. And finally, though we view predominance as a somewhat closer question in this context than in the trader-based context, we again conclude that a class action would be unmanageable given our predominance findings. In sum, though the first and second Rule 23(b)(3) factors weigh in favor of

superiority, we again conclude that a class action would be unmanageable in light of the predominance issues we identify, and this manageability issue is sufficient to defeat superiority.

4.6. Conclusion

Exchange plaintiffs' motion for certification of a suppression class is denied. While Exchange plaintiffs have established the four Rule 23(a) requirements, the proposed class stumbles at Rule 23(b)(3)'s predominance and superiority hurdles. While the common-question side of the scale is weightier here than for the proposed trader-based class, Exchange plaintiffs nonetheless have not carried their burden of demonstrating preponderance by establishing that but-for LIBOR may be calculated on a classwide basis, that changes in LIBOR would have been reflected in EDF prices in a classwide manner, or that damages may be calculated for all class members relying on the same evidence. Exchange plaintiffs' pro forma suggestion that we "modify the Class or certify [a] remaining portion" (Exch. Pls.' Suppr. Reply 35), unaccompanied by any serious analysis, does not offer a basis on which to modify the class definition.[128]

[128] Issue certification under Rule 23(c)(4) is also inappropriate, as it "would not materially advance the litigation because it would not dispose of larger issues" remaining in the action. McLaughlin, 522 F.3d at 234.

IV. LENDER ACTION

Berkshire Bank, the sole named Lender plaintiff remaining,[129] seeks certification of a class defined as follows:

> All lending institutions headquartered in the United States, including its fifty (50) states and United States territories, that originated loans, held loans, purchased whole loans, purchased interests in loans or sold loans with interest rates tied to USD LIBOR, which rates adjusted at any time between August 1, 2007 and May 31, 2010.

The operative Second Amended Consolidated Class Action Complaint identified all 16 panel banks (and certain affiliates) as defendants along with the BBA. (Second Am. Consol. Class Action Compl. ("SAC") ¶¶ 24-41, Apr. 18, 2016, ECF No. 1383.) In LIBOR V, we reaffirmed the personal jurisdiction conclusions initially set forth in LIBOR IV, see LIBOR V, 2015 WL 6696407, at *8-9, slip op. at *23-25 (citing LIBOR IV, 2015 WL 6243526, at *30, *37-38, slip op. at *73-74, *94-95), ultimately dismissing the BBA and a number of panel bank defendants. Additionally, Berkshire has reached a settlement with Citi and has moved for preliminary approval of that settlement.[130] (Letter from Jeremy Lieberman to the Court, Jan. 16, 2018, ECF No. 2403.) Accordingly, to the

[129] The operative complaint lists the Government Development Bank for Puerto Rico and Directors Financial Group as named plaintiffs. (SAC ¶¶ 22-23.) We previously dismissed the Government Development Bank's claims for being untimely under Puerto Rico law, LIBOR V, 2015 WL 6694607, at *12-13, slip op. at *32-34, and Directors Financial Group withdrew its claims, (Stipulation of Dismissal with Prejudice, Feb. 2, 2017, ECF No. 1758).

[130] Though we dismissed HSBC as a defendant in this action, HSBC has also settled with Berkshire. (Letter from Jeremy Lieberman to the Court, Jan. 16, 2018, ECF No. 2403.)

extent a class is certified in this action, it would be certified against only Bank of America, JPMorgan Chase, and UBS (collectively, "Lender defendants"). The SAC asserts two causes of action, one for fraud and the other for civil conspiracy to commit fraud, both under state law. (SAC ¶¶ 362-81.)

1. Daubert Motions

In litigating the class certification motion, Berkshire has offered expert testimony from Dr. Robert Webb and Lender defendants have offered expert testimony from Dr. Robert Willig, Dr. Janusz Ordover, and Mr. Brian Kelley. Defendants have moved to exclude certain portions of Dr. Webb's testimony, and Berkshire has moved to exclude certain portions of Dr. Willig's testimony.[131] We again consider the Daubert motions before proceeding to the class certification motion.

1.1. Dr. Webb

Berkshire offers two reports from Dr. Robert Webb: (1) an initial report dated February 2, 2017 (Decl. of Jeremy Lieberman ex. 5, May 2, 2017, ECF No. 1889); and (2) a rebuttal report dated May 3, 2017 (Decl. of Paul Mishkin ex. 5, June 30, 2017, ECF No. 2025). We refer to these as the Webb Initial Report and the Webb Rebuttal Report, respectively. Across these two reports, Dr.

[131] Berkshire does not challenge the admissibility of Mr. Kelley's report (Decl. of Paul Mishkin ex. 1, June 30, 2017, ECF No. 2025) or Dr. Ordover's report (Decl. of Paul Mishkin ex. 2, June 30, 2017, ECF No. 2025). We refer to these reports, which are both dated April 3, 2017, as the Kelley Report and the Ordover Report, respectively.

Webb's opinions relate primarily to: (1) calculating the extent to which LIBOR was suppressed during the class period; and (2) calculating damages to putative class members as a result of LIBOR manipulation. Lender defendants do not challenge Dr. Webb's qualifications to offer these opinions; we agree that Dr. Webb is so qualified.[132]

As to suppression, Dr. Webb first compares published LIBOR to a number of "potential measures" of suppression, including a "Bank Funding Rate" calculated based on "the actual rates paid by Defendants in their issuance of funding instruments linked to USD LIBOR with a six months maturity" (Webb Initial Report ¶ 41 (footnote omitted)) and the ICAP-Ask rate,[133] which Dr. Webb refers to as the "ICAP EDDR" rate (Webb Initial Report ¶ 46), among others. To ultimately estimate what LIBOR would have been in the absence of suppression, Dr. Webb uses a Eurodollar deposit rate published by Bloomberg, the "Bloomberg CMPL" rate. (Webb Initial Report ¶ 45.) Dr. Webb calculates but-for LIBOR by regressing actual published LIBOR against the Bloomberg CMPL over an unspecified clean period[134] and then using the results of that

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[132] Dr. Webb is the Martin J. Pastel, Jr. Research Professor at the University of Virginia McIntire School of Commerce and is the Editor-in-Chief of the Journal of Futures Markets. He holds a Ph.D. and M.B.A. in Finance from the University of Chicago Graduate School of Business and has written extensively on various economic and finance subjects. (Webb Initial Report app. A.)

[133] For a description of the ICAP-Ask rate, see supra note 15.

[134] Dr. Webb explains that the R-squared of his Bloomberg CMPL regression is 99.99% over the period from January 1, 2004 to July 31, 2007, and his but-

regression to estimate but-for LIBOR during the class period. (Webb Initial Report ¶ 72). Lender defendants do not seek exclusion of these opinions under Daubert.

As to damages, Dr. Webb opines that "[t]he calculation of damages to the Class is susceptible to common proof on a formulaic basis," reasoning that "[t]he amount of damage suffered by the Class member on [each reset date] is equal to the amount of suppression of USD LIBOR multiplied by the outstanding nominal loan amount(s) owed to that Class member" for the reset period. (Webb Initial Report ¶ 26.) Dr. Webb supports this opinion by taking his Bloomberg CMPL-based but-for LIBOR series and calculating damages to be the difference between the actual interest received on certain loans (calculated based on published LIBOR) and the interest that would have been received on those loans (calculated based on his but-for LIBOR series). (Webb Initial Report ¶¶ 77-83.) In his rebuttal report, Dr. Webb expands on these analyses to incorporate damages on LIBOR-based instruments other than loans, the issues of absorption that we identified in LIBOR VI, and the effect of interest-rate floors. (Webb Rebuttal Report ¶¶ 114-33.)

for LIBOR regression is presumably based on such a clean period. (Webb Initial Report ¶ 49 n.17.) R-squared refers to the coefficient of determination, which measures the amount of variation in the dependent variable that can be explained by variation in the explanatory variables. See supra note 31.

Lender defendants do seek exclusion of these opinions. They contend first that Dr. Webb's methodology does not assess damages under the out-of-pocket loss rule that we concluded applied to Berkshire's claims in LIBOR V, a mismatch that is fatal to class certification under Comcast. Second, Lender defendants assert that Dr. Webb's damages methodology is unreliable because it fails to account for certain significant aspects of the but-for world, including (1) "what demand and default rates for their LIBOR-linked loans would have been"; (2) "how alleged LIBOR suppression would have affected the price and other terms of their LIBOR-linked loans"; and (3) "how lenders' LIBOR-linked borrowings, hedges, and other transactions would have been impacted." (Lender Defs.' Class Opp'n 18-19.) We consider each argument in turn.

1.1.1. Assessment of Damages

Berkshire first responds that Dr. Webb's analysis is consistent with its liability case because some class members will be subject to a benefit-of-the-bargain rule (under which but-for LIBOR is relevant) and because calculation of damages using alternative rates (which is required under New York's out-of-pocket damages rule) could be performed applying "only grade-school arithmetic" once the alternative rate is determined. (Berkshire Webb Opp'n 13-14.) Citing In re Scotts EZ Seed's holding that "Nothing in Comcast requires an expert to perform his analyses at the class certification stage," 304 F.R.D. at 414,

Berkshire contends that the operative question is "whether plaintiffs have established a workable damages model, not whether the model actually works." (Berkshire Webb Opp'n 14-15.)

This response is unpersuasive. Though we agree that the substitution of an alternative rate, once determined, in place of but-for LIBOR would not be an analytically intensive exercise, but Dr. Webb never opines that determining the alternative rate may be done formulaically, which is necessary to support his opinion regarding the calculation of damages. Further, Dr. Webb's failure to actually perform an alternative rate is not excused by the straightforward nature of the calculation. As Dr. Webb does not claim that he lacks necessary data, his failure to do so is particularly inexcusable in light of that ease.

At bottom, Dr. Webb's model does not calculate, and does not purport to calculate, "damages" to Berkshire or any other putative class member under the out-of-pocket damages rule that we set forth in LIBOR V, and the out-of-pocket damages rule is of particular significance here because Berkshire is the only named plaintiff remaining.[135] Unlike the expert's models in In re Scotts EZ Seed, Dr. Webb's models simply do not "match plaintiffs' theories of liability" under New York law. 304 F.R.D. at 414.

1.1.2. Construction of the But-For World

[135] Perhaps acknowledging this shortcoming of Dr. Webb's opinion, Berkshire belatedly suggests that we should revisit this analysis in LIBOR V. For the reasons we explain fully below, we decline this invitation.

Berkshire offers three responses to Lender defendants' second argument. First, Berkshire argues that regressions are considered the "gold standard" in antitrust actions. (Berkshire Webb Opp'n 16, 18-19.) Second, Berkshire contends that the issues that Lender defendants accuse Dr. Webb of having failed to consider are speculative as a factual matter. (Berkshire Webb Opp'n 17.) Third, Berkshire asserts that, as a matter of law, Dr. Webb was not required to take into account these aspects of the but-for world because defendants must bear the consequences of any uncertainty resulting from their wrongdoing. (Berkshire Webb Opp'n 17-20.)

First, Berkshire's invocation of general case law about regressions in antitrust actions is not responsive on multiple levels. For one, this action raises fraud claims, not antitrust claims. Second, while Dr. Webb conducts regressions in order to calculate one of the inputs to his damages model -- but-for LIBOR -- Lender defendants' motion challenges how Dr. Webb subsequently applies the results of that regression, not the regression itself. Indeed, a regression, even if conducted in a reliable manner consistent with econometric principles, may still be applied in an unreliable way.[136]

[136] It also bears repeating that the acceptance of regressions as a statistical method generally does not imply that all regressions will be admissible under Daubert. Questions remain in each case as to whether the regression takes reliable data as inputs, see Fed. R. Evid. 702(b), whether the regression is properly specified, see, e.g., Bickerstaff, 196 F.3d at 449-50,

Second, Berkshire's suggestion that "[n]either Professor Ordover nor Mr. Kelley identify a single term from any class member loan that would have definitely been different" is simply unpersuasive. (Berkshire Webb Opp'n 17.) As to demand, Berkshire's attempt to escape the laws of supply and demand fail. Consider, for example, a would-be homeowner seeking a mortgage loan: a higher interest rate means that the borrower will have higher monthly mortgage payments for a given loan amount; a borrower who wishes to keep his monthly payment constant will seek a smaller loan amount. Cf. Robinson v. Tex. Auto Dealers Ass'n, 387 F.3d 416, 423 (5th Cir. 2004) (describing "[b]ottom-line purchasers"). More broadly, in making loans, lenders sell a good -- capital -- to borrowers at a given price -- the interest rate. Therefore, it is wholly unsurprising that (absent shifts in the demand curve) a higher interest rate will decrease demand, resulting in a lower volume of loans being made. Dr. Webb concedes the point himself, (Webb Dep. 276:13-18, Decl. of Paul Mishkin ex. 6, June 30, 2017, ECF No. 2025), and as the Second Circuit summarized: "[i]ncreased mortgage interest rates led to a spike in prices that made many homes too expensive for potential buyers, decreasing demand." Fed. Hous. Fin. Agency v. Nomura Holding Am., Inc., 873 F.3d 85, 108 (2d Cir. 2017). As to default rate, resets

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and whether the expert properly interprets the regression to support any conclusions ultimately reached, see, e.g., Amorgianos, 303 F.3d at 267.

to higher interest rates over the life of a loan will increase defaults. Dr. Webb again concedes the point, (Webb Dep. 278:16-279:6), and as the Second Circuit recognized, "[d]efaulting on mortgage loans became an attractive option for homeowners" as a result of rising interest rates and decreased home values leading to the financial crisis. Nomura, 873 F.3d at 107. And as to spread, Berkshire does not meaningfully rebut Dr. Ordover's testimony that spreads on floating-rate loans are subject to negotiation or, for that matter, its own representative's testimony that its loans were in fact negotiated and that its spreads were sensitive to underlying interest rates.[137] (Ordover Report ¶¶ 39-40; Lukens Dep. 36:5-7, 240:4-6, 271:4-6, Decl. of Paul Mishkin ex. 7, June 30, 2017, ECF No. 2025 ("Lukens Dep.").)

Third, Berkshire's reliance on In re Electronic Books, which held that an expert was not required to model various "features of a but-for world" because "the but-for world does not exist" is unavailing in this context. In re Elec. Books Antitrust Litig., No. 11 MD 2293 (DLC), 2014 WL 1282293, at *27 (S.D.N.Y. Mar. 28, 2014). In re Electronic Books concluded that certain features of the but-for world "lost all relevance once the conspirators raised the prices for e-books," id. at *28, but we are hesitant to read

[137] The interest rate associated with a floating rate loan consists of two components: the benchmark rate and a spread above or below that benchmark. For example, a floating rate loan might have an interest rate of 3-month LIBOR plus 50 basis points. The benchmark rate is 3-month LIBOR, and the spread is +50 basis points.

these statement too broadly. The but-for world, by construction, does not exist, but it still must be constructed in a reasonable way such that a reasonable approximation of damages may be made. An oversimplification that fails to consider important aspects of the but-for world will fail to yield such a reasonable approximation, and indeed, In re Electronic Books acknowledged that demand for e-books remained relevant to the damages analysis. Id. (referencing "the frequency with which a consumer may have purchased e-books"). Demand is relevant here, too.

We recognize that a defendant must bear the risk of uncertainty from its wrongdoing, see, e.g., Story Parchment Co. v. Paterson Parchment Paper Co., 282 U.S. 555, 563 (1931) ("[T]he risk of the uncertainty should be thrown upon the wrongdoer instead of upon the injured party."), but also adhere to the principle that a plaintiff first "bears the burden of showing that the claimed damages are the 'certain result of the wrong,'" Anderson Grp., LLC v. City of Saratoga Springs, 805 F.3d 34, 52-53 (2d Cir. 2015) (quoting Story Parchment, 282 U.S. at 563)). The question, therefore, is whether Berkshire has carried this burden. It has not.

1.1.3. Conclusion

Lender defendants' motion to exclude Dr. Webb's damages opinions is therefore granted. By calculating only the difference between actual published LIBOR and but-for LIBOR and failing to

take into account not only the applicable legal standard that we set forth in LIBOR V but also other relevant aspects of the but-for world, Dr. Webb's methodology cannot be fairly said to calculate "damages."[138]

1.2. Dr. Willig

Lender defendants offer an expert report from Dr. Robert Willig dated April 3, 2017, which we refer to in the context of this action as the Willig Report. (Decl. of Paul Mishkin ex. 3, June 30, 2017, ECF No. 2025.) As in the Exchange-based action, the Willig Report includes several opinions based on an analysis of interbank lending transactions into which panel banks actually entered. (Willig Report ¶ 14.) Berkshire moves to exclude Dr. Willig's opinions to the extent they are based on this analysis, specifically, sections IV through VI of the Willig Report. (Berkshire Willig Mem. 1.)

Berkshire contends that these opinions are excludable under Daubert for three primary reasons: (1) Dr. Willig's comparison of observed interbank transaction rates contradicts the LIBOR question's focus on "offered rates" and is therefore unreliable and irrelevant (Berkshire Willig Mem. 16-22); (2) Dr. Willig's opinions are dependent on an unreliable dataset that does not distinguish offer-initiated transactions from bid-initiated

[138] Of course, the "upstream" aspects of Dr. Webb's analysis were not challenged by Lender defendants and remain admissible, our misgivings about certain aspects of that analysis notwithstanding.

transactions (Berkshire Willig Mem. 22-23); and (3) Dr. Willig's results are contradicted by certain bank documents and resulted from Dr. Willig's "bad faith" (Berkshire Willig Mem. 23-24).[139]

1.2.1. The LIBOR Question

Berkshire's first argument challenges Dr. Willig's assumption that "panel banks' borrowing transactions provide the most informative data for evaluating the accuracy of their LIBOR submissions" and his analysis's subsequent reliance on observed interbank transaction rates. (Willig Report ¶ 16.) Like Exchange plaintiffs, Berkshire bases this challenge on the LIBOR question itself, BBA documents, and certain other sources.

As in the Exchange-based action, Berkshire's repeated reliance on panel banks' "borrowing costs" in its allegations is sufficient to warrant denial of this motion. See Andrews, 882 F.2d at 707; TufAmerica, Inc., 968 F. Supp. 2d at 600. For example, in the operative complaint, Berkshire alleges that Defendants manipulated LIBOR by making submissions that "did not honestly reflect the submitting banks' actual borrowing costs on the interbank market" and conspired to make LIBOR submissions "below their actual borrowing costs." (SAC ¶¶ 261, 377.) Further, Berkshire repeatedly asserted that interbank transaction data were necessary to assess the true extent of suppression. For instance,

[139] Berkshire does not challenge Dr. Willig's qualifications. We conclude here, as we do in the Exchange-based action, that Dr. Willig is well qualified to offer the opinions presented in his report. See supra note 83.

Berkshire alleged that "[t]he Panel Bank Defendants' actual borrowing costs were not publicly disclosed, rendering it impossible to discern without internal documents and sophisticated expert analysis the full extent of their fraud," (SAC ¶ 284 (emphasis added)), and that the public unavailability of data on "the rates at which panel banks could borrow" served as a basis for tolling statutes of limitations, (e.g., SAC ¶ 333). Berkshire's earlier complaints contain materially similar allegations. (E.g., First Am. Consolidated Class Action Compl. ¶¶ 252, 368, Nov. 17, 2015, ECF No. 1238; Am. Class Action Compl., ECF No. 242, ¶¶ 40, 88, Nov. 21, 2012, ECF No. 242.)

Berkshire, in reply, accuses Lender defendants of "elevat[ing] form above substance," and now contends that its repeated references to "borrowing costs" were merely "short-hand wording in the Complaint" intended to refer only to offered rates. (Berkshire Willig Reply 3.) Even if we were to accept this revisionist history, which is truly difficult to reconcile with Berkshire's own understanding that LIBOR represents the rate at which a panel bank "actually borrowed in the market" (Krausz Dep. 19:2-7, Decl. of Paul Mishkin ex. 10, June 30, 2017, ECF No. 2025 ("Krausz Dep.")), Berkshire's argument would still fail. Berkshire relies largely on the same sources relied upon by Exchange plaintiffs: the text of the LIBOR question; the BBA "definitions" page; the Kuo, Skeie, and Vickery working paper; the

Credit Suisse Fixed Income Research Report; and the JPMorgan Chase internal document purporting to set forth the bank's LIBOR submission policy. (Berkshire Willig Mem. 5-8.)

We have already analyzed these sources and have already concluded that they establish that while LIBOR represents an offered rate and is not itself a transaction rate, rates observed in actual transactions are, at minimum, properly considered in a bank's determination of its LIBOR submissions. See supra section III.2.3.1. Given that actual transaction rates are properly considered in a panel bank's determination of its LIBOR submissions, they may similarly be properly considered in determining whether a bank's LIBOR submissions were suppressed and whether such suppression can be established through common evidence. Indeed, Berkshire's argument here is particularly surprising given that Dr. Webb constructs a "Bank Funding Rate" series using actual interest rates paid by panel banks in issuing certain funding instruments and compares that rate to LIBOR submissions (Webb Initial Report ¶¶ 41-42), and further given Dr. Webb's concession that "unsecured borrowing transaction[s] by a panel member in the London interbank market [is] are relevant to the LIBOR question (Webb Dep. 24:21-25, Decl. of Jamie Heine ex. 6, July 21, 2017, ECF No. 2105). To conclude, we reaffirm our conclusion that actual transactions are relevant in analyzing whether a panel bank made suppressed LIBOR submissions.

1.2.2. Bid-Initiated and Offer-Initiated Transactions

Second, Berkshire asserts that Dr. Willig did not distinguish transactions initiated by offers from transactions initiated by bids in conducting his analysis, and that this oversight undermines the reliability of his opinions because "'[b]ids' and bid [-initiated] transactions are irrelevant to the LIBOR Question." (Berkshire Willig Mem. 22.)

We are unpersuaded that the distinction between bid-initiated transactions and offer-initiated transactions is a meaningful one. While bids are unquestionably different from offers (or asks), Berkshire provides no credible authority for why bid-initiated transactions would be different from offer-initiated transactions, particularly in the LIBOR context where the parties to interbank transactions are banks, and generally large ones, by definition. Notably, the sources on which the parties rely in advancing their interpretations of the LIBOR question refer to "transaction[s]," with no distinction made between whether the transactions were initiated by a bid or an offer.

Indeed, the price (which in this case is an interest rate) at which a transaction actually occurs will generally represent some compromise between the parties' initial positions after negotiation. Berkshire's primary argument rests on the proposition that the seller's initial position -- the offer -- is a pre-negotiation position distinct from the ultimate transaction

rate produced through the negotiation process, which in turn is distinct from the buyer's initial position, the bid. (E.g., Berkshire Willig Reply 4.)

But bid-initiated transaction rates and offer-initiated transaction rates are first and foremost (post-negotiation) transaction rates. That is, bids are distinct from offers, and both are distinct from transaction rates. Berkshire has not established that, within the broader category of transactions, rates will differ post-negotiation based on whether the seller approached the buyer or vice versa.[140]

1.2.3. Contradiction by Bank Documents

Finally, Berkshire contends that the reliability of Dr. Willig's analysis is undermined by "the Panel Banks' own Class Period admissions as to where their LIBOR submissions should be," relying on communications between panel bank employees speculating as to what a panel bank's LIBOR submission should have been. (Berkshire Willig Mem. 24.) Berkshire also suggests that Dr. Willig's reliance on data that is "so unreliable and irrelevant" "can only be explained by . . . 'bad faith.'" (Berkshire Willig Mem. 24.) Neither argument is remotely persuasive.

The comparison of Dr. Willig's interbank transaction rates to but-for LIBOR (and but-for LIBOR submissions) as contemplated by

[140] Berkshire's references to the bid-ask spread are accordingly unavailing. The bid-ask (or bid-offer) spread -- as its name suggests -- refers to bids and asks (or offers) themselves as opposed to bid-initiated transactions and offer-initiated transactions.

certain panel bank employees is inapt. Berkshire's attempted direct comparison mischaracterizes Dr. Willig's opinions, as it ignores Dr. Willig's statement that his "re-calculations of the LIBOR rates after substituting banks' average London Interbank Borrowing costs for their submissions are not intended to be estimates of but-for rates." (Willig Report ¶ 93 n.80.) Indeed, Dr. Webb comes comparably close to using transaction rates to calculate but-for LIBOR, constructing a "Bank Funding Rate Implied LIBOR" series. (Webb Initial Report ¶ 66.)

Berkshire's additional suggestion that Dr. Willig's decision to analyze interbank transaction data instead of alternative data sources can be explained only by "bad faith" is simply not credible. Berkshire has repeatedly relied on such a comparison over the course of this case, as we have recounted above. Further, Dr. Willig explains -- in portions of his report that Berkshire does not seek to exclude -- why the alternative data sources for which Berkshire advocates (and on which Dr. Webb relies) are inferior choices compared to his analysis of transaction rates. (Willig Report ¶¶ 118-43.) We need not decide whether these explanations are ultimately persuasive in order to conclude that Berkshire's "bad faith" aspersion is wholly miscast.

1.2.4. Conclusion

Berkshire's motion to exclude sections IV through VI of the Willig Report is denied. Even if Berkshire were not bound by the

history of its allegations that panel banks suppressed LIBOR by making submissions below their "actual borrowing costs," our review of the LIBOR question itself and other interpretive sources confirms that while LIBOR represents an offered rate, a bank's LIBOR submission should be based on its perception of the rates it would be offered and the "totality of the information" available to it. Berkshire's attempted distinction of bid-initiated transactions and offer-initiated transactions is illusory and does not render Dr. Willig's analysis unreliable; its attempt to paint Dr. Willig's transaction analysis as a calculation of but-for LIBOR is a mischaracterization and fares even worse.

2. Class Certification

Turning to Berkshire's motion for class certification, we consider whether the proposed class complies with the four Rule 23(a) requirements, the implied requirement of ascertainability, and the Rule 23(b)(3) requirements of predominance and superiority.

2.1. Rule 23(a)

Lender defendants do not appear to dispute that the requirements of numerosity and commonality are satisfied, though they do dispute typicality and adequacy of representation. We consider Rule 23(a)'s requirements in order.

2.1.1. Numerosity

Berkshire contends that LIBOR-based loans were made "by thousands of financial institutions" such that the numerosity requirement is satisfied. (Berkshire Class Mem. 7) Though Berkshire provides no evidence in support of this assertion, we nonetheless conclude that it is more likely than not that more than 40 institutional lenders made LIBOR-based loans that reset during the class period and that numerosity is therefore satisfied. See Pa. Pub. Sch. Emps., 772 F.3d at 120.

2.1.2. Commonality

We also conclude that the proposed class raises at least one common question. In the context of "fraud claims based on uniform misrepresentations made to all members of the class," misrepresentation is a common question because "the standardized misrepresentations may be established by generalized proof." Moore, 306 F.3d at 1253. Here, Berkshire alleges that panel banks made misrepresentations by making inaccurate LIBOR submissions, and those submissions, which form the basis of published LIBOR, necessarily pertain to all class members.

While Lender defendants correctly point out that proof of misrepresentation, knowledge of falsity, and intent will differ across panel banks and days, these differences do not render these issues individual in nature. Each bank's submission serves as an input into published LIBOR, and published LIBOR is the means through which each class member was impacted by the alleged

misrepresentations. And while different class members' LIBOR-based loans are likely to have different reset schedules such that different specific dates are of relevance to different class members, this day-to-day variation is of limited significance in the context of Berkshire's claims of persistent suppression and does not preclude a finding of commonality.

2.1.3. Typicality

Next, Lender defendants contend that Berkshire's claims are not typical because Berkshire in fact has no claim at all. They rely, in particular, on evidence that Berkshire had issued $22 million in LIBOR-based debt, which is greater in face value than the six LIBOR-based loans alleged in the complaint. (Lender Defs.' Class Opp'n 17.) Berkshire responds that the $22 million in "debt"[141] was issued by its holding company, and that Berkshire also held more than $100 million in LIBOR-based auction rate securities. (Berkshire Class Reply 19.)

If an entity had no exposure to LIBOR (or negative exposure such that it benefited from alleged suppression), we would agree that that entity's claim is atypical of the class's claims. Here, however, the factual record on this point remains underdeveloped

[141] At oral argument, counsel for Berkshire rejected the characterization of the $22 million as "debt" and referred to the instrument in question instead as a "security" and a "securitization." (Hr'g Tr. 61:5-6; 62:9.) We are unsure what exactly counsel meant (as debt would still be a "security"), but counsel did not appear to dispute that the instrument in question resulted in Berkshire's receipt of funds in exchange for payments by Berkshire at an interest rate based on LIBOR.

and makes an assessment of Berkshire's overall exposure to LIBOR difficult. In its complaint, Berkshire alleges that it issued six LIBOR-based loans: (1) a $1.389 million amortizing mortgage; (2) a $2 million amortizing mortgage; (3) a $1.352 million amortizing real estate loan; (4) a $7.364 million commercial revolver; (5) a $5 million revolver; and (6) a $440,000 amortizing loan. (SAC ¶ 20.) These loans total approximately $18 million in face value (though Berkshire's total LIBOR exposure at any given point in time would be less because many of the loans are amortizing), which is less than the $22 million of LIBOR-based securities issued by Berkshire's holding company. However, neither Berkshire nor Lender defendants have submitted comprehensive evidence of other LIBOR-based instruments that were held by Berkshire or its corporate affiliates during the class period. We ultimately know little about the $22 million "debt," and we know even less about the $100 million in auction-rate securities.

On this record, we conclude that Berkshire's claims are typical of the class's claims. We accept counsel's representation that the $22 million debt issuance was made by Berkshire's holding company and not Berkshire itself (Hr'g Tr. 61:5-7), and by extension the proposition that Berkshire had some positive exposure to LIBOR. In the absence of a full record and assuming Berkshire was a lender with net LIBOR exposure, we agree that the

alleged conspiracy to suppress LIBOR is sufficiently central to all class members' claims such that typicality is satisfied.

2.1.4. Adequacy of Representation

Adequacy of representation is called into question when "some difference between the class representative and some class members might undermine [the class representative's] incentive" to pursue the class's claims. In re Payment Card Interchange Fee, 827 F.3d at 231. "A key element in the determination of whether a plaintiff's interests are antagonistic to those of other members of the class is the relationship between the class representative and class counsel." In re IMAX Sec. Litig., 272 F.R.D. 138, 155 (S.D.N.Y. 2010); see 5 Moore's Federal Practice § 23.25[2][b][vi] (3d ed. 2017) ("[I]f a class representative is closely affiliated with class counsel, courts usually consider this to be a disqualifying conflict of interest."); 1 William B. Rubenstein, Newberg on Class Actions § 3:70 (5th ed.) (Westlaw 2017) ("[A] few courts have held class representatives inadequate when they have a close familial or business relationship or friendship with class counsel."); see also Susman v. Lincoln Am. Corp., 561 F.2d 86, 90 (7th Cir. 1977) ("[A] majority of courts . . . have refused to permit class attorneys, their relatives, or business associates from acting as the class representative." (footnotes omitted)). This concern arises because "when a class representative is closely associated with class counsel, he or she may permit a settlement

less favorable to the interests of absent class members." In re IMAX, 272 F.R.D. at 155-56 (quoting In re Discovery Zone Sec. Litig., 169 F.R.D. 104, 108 (N.D. Ill. 1996)). However, a relationship between a class representative and class counsel "is not inevitably disabling," 1 William B. Rubenstein, Newberg on Class Actions § 3:70 (5th ed.) (Westlaw 2017), and "there is no per se rule against relatives of class counsel serving as class representatives," Gross v. GFI Grp., Inc., No. 14 Civ. 9438 (WHP), 2017 WL 3668844, at *2 (S.D.N.Y. Aug. 23, 2017) (quoting Dupler v. Costco Wholesale Corp., 249 F.R.D. 29, 42 (E.D.N.Y. 2008)).

Rather, whether a close relationship with class counsel renders a named plaintiff inadequate is a fact-intensive inquiry. Cf. Malchman v. Davis, 761 F.2d 893, 900 n.2 (2d Cir. 1985) ("[T]he question whether named plaintiffs are adequate class representatives is one committed to the sound discretion of the district court."), abrogated on other grounds by Amchem, 521 U.S. 591. In making this assessment, courts have considered numerous factors such as: (1) the closeness and extent of the relationship, see Gross, 2017 WL 3668844, at *3; In re IMAX, 272 F.R.D. at 156; (2) whether the related attorney's relationship and role in the litigation have been disclosed, see Gordon, 92 F. Supp. 3d at 199; In re IMAX, 272 F.R.D. at 156; (3) whether "attorneys' fees will greatly exceed the class representative's recovery," Spagnola v. Chubb Corp., 264 F.R.D. 76, 96 (S.D.N.Y. 2010) (quoting Martz v.

PNC Bank, N.A., No. 06-1075, 2007 WL 2343800, at *5 (W.D. Pa. Aug. 15, 2007)); see also Gross, 2017 WL 3668844, at *1; Gordon, 92 F. Supp. 3d at 200; and (4) the extent of the related attorney's involvement in the litigation, see Gross, 2017 WL 3668844, at *1; Gordon, 92 F. Supp. 3d at 199. A "potential conflict of interest" is sufficient to render a named plaintiff an inadequate class representative, Hale v. Citibank, N.A., 198 F.R.D. 606, 607 (S.D.N.Y. 2001); see also Gordon, 92 F. Supp. 3d at 199 (referring to "the appearance of impropriety"); In re IMAX, 272 F.R.D. at 157 (same); cf. Malchman, 761 F.2d at 900 n.2 (observing, in the adequacy of representation context, that "the notion that the appearance of conduct is as important as the conduct itself is a predicate for the Code of Professional Responsibility" (quoting Susman, 561 F.2d at 93)), and a conflict need not violate state law or professional responsibility rules in order to render a named plaintiff inadequate, see Hale, 198 F.R.D. at 607 ("Whether these problematic arrangements violate New York State law or ethics is not before this Court.").

Defendants' class certification papers revealed for the first time that Mordchai Krausz, whom interim class counsel Pomerantz LLP has agreed to pay "15% of the net fees that [Pomerantz] receives for [his] participating in the work and responsibility in connection with [this] litigation," is the son of Berkshire's CEO Moses Krausz (Mishkin Decl. ex. 16), and Mordchai Krausz's

extensive history with Berkshire is a newer revelation still (Hr'g Tr. 29:13-14). Applying the factors outlined above, we conclude that Mordchai Krausz's 15% interest in attorneys' fees earned by class counsel is sufficient to create the "appearance of impropriety" and renders Berkshire an inadequate class representative.

First, the relationship between Berkshire, with Moses Krausz as Berkshire's CEO, and Mordchai Krausz is sufficiently close to raise at least some appearance of impropriety. Berkshire correctly identifies that this case is unique in that the named plaintiff is a corporate entity with a board of directors rather than an individual plaintiff, but a close relationship need not be familial in order to raise adequacy issues: "a close familial or business relationship or friendship with class counsel" is enough to do so. 1 William B. Rubenstein, Newberg on Class Actions § 3:70 (5th ed.) (Westlaw 2017) (emphasis added); see also, e.g., Susman, 561 F.2d at 90 ("[C]ourts . . . have refused to permit class attorneys, their relatives, or business associates from acting as the class representative." (emphasis added)). Berkshire's acknowledgement of an extensive business relationship with Mordchai Krausz beyond the context of this litigation (Hr'g Tr. 30:5-9) does not lessen this concern.

This concern is confirmed by the remaining factors that are frequently analyzed in assessing whether a close personal or

business relationship precludes a finding of adequacy of representation. Mordchai Krausz's role in this case -- let alone his entitlement to fees -- was not disclosed until recently, and then only by Lender defendants. Further, Mordchai Krausz has not entered a notice of appearance nor has he signed any of the pleadings. See In re IMAX, 272 F.R.D. at 156 ("Even to this day, [the related attorney] has not filed a notice of appearance.").

Further, the amount of attorneys' fees to Pomerantz -- and Mordchai Krausz's 15% share thereof -- is likely to greatly exceed any recovery by Berkshire. Berkshire's complaint alleges a total of $45,861 in damages under its "but-for LIBOR" theory of damages. (SAC ¶ 20.) Mordchai Krausz would stand to receive more than this amount if Pomerantz's fee award were to exceed $305,740; given that this action has been extensively litigated for more than five years and that Berkshire has settled with Citi and HSBC for a combined $27 million, any fee award to Pomerantz is likely to greatly exceed this amount.[142]

And finally, we find that the record suggests that Mordchai Krausz's role in the litigation has been limited such that a 15% cut of Pomerantz's fees -- potentially 4.5% of the total recovery -- would be disproportionate. Berkshire contends that Mordchai

[142] If Pomerantz were to seek attorneys' fees equal to 30% of the recovery produced by these settlements (the maximum it may seek), its fee award would be $8.1 million and Mordchai Krausz's share would be $1.22 million. We, of course, reserve judgment on the propriety of these settlements and any attendant application for attorneys' fees that might be made.

Krausz is experienced and "has assisted substantially in the prosecution of this claim including the review of filings and providing comments to Pomerantz." (Berkshire Class Reply 29.) Even assuming Mordchai Krausz's experience and qualifications, Berkshire's description of his role in this litigation -- having reviewed the pleadings and provided comments to class counsel -- nonetheless suggests a limited role, not an extensive one.

Resisting this conclusion, Berkshire suggests that our power to review proposed settlements for fairness is sufficient to protect the class despite any potential impropriety. (Berkshire Class Reply 30.) Berkshire also identifies four cases in which a class representative was found to provide adequate representation despite a close personal relationship with class counsel: Judge Pauley's recent decision in Gross, 2017 WL 3668844, as well as Elias v. Ungar's Food Prods., Inc., 252 F.R.D. 233 (D.N.J. 2007); In re Cardizem CD Antitrust Litig., 200 F.R.D. 326 (E.D. Mich. 2001); and Zakaria v. Gerber Prods. Co., No. LA CV15-00200 JAK, 2016 WL 6662723 (C.D. Cal. Mar. 23, 2016).

Berkshire's first argument cannot be reconciled with Rule 23 or Supreme Court and Second Circuit precedent. Rule 23(a)(4) requires us to ask whether "the representative parties will fairly and adequately protect the interests of the class," Fed. R. Civ. P. 23(a)(4), not whether we believe the interests of absent class members are being fairly treated, cf. Fed. R. Civ. P. 23(e)(2)

("[T]he court may approve [a settlement] only after a hearing and on finding that it is fair, reasonable, and adequate."). Consistent with this distinction set forth in the structure of Rule 23, the Supreme Court and Second Circuit have made clear that the adequacy of a named plaintiff's representation and the fairness of a subsequent settlement are wholly distinct inquiries. See Amchem, 521 U.S. at 622 ("Federal courts, in any case, lack authority to substitute for Rule 23's certification criteria a standard never adopted -- that if a settlement is 'fair,' then certification is proper."); Denney, 443 F.3d at 268 ("Adequacy must be determined independently of the general fairness review of the settlement."). Indeed, as courts have recognized, "[t]he adequacy of the proposed class representative is widely considered the most important of the Rule 23(a) factors because it directly implicates the due process rights of absent class members who will be bound by the judgment." Gordon, 92 F. Supp. 3d at 198; see also Eisen v. Carlisle & Jacquelin, 391 F.2d 555, 562 (2d Cir. 1968) (concluding, following the 1966 enactment of Rule 23 and its allowance of class actions with preclusive effect, that "a court must now carefully scrutinize the adequacy of representation in all class actions").[143]

[143] At oral argument, counsel for Berkshire suggested that we have jurisdiction to preclude Mordchai Krausz from receiving any attorneys' fees that are ultimately awarded to Pomerantz. (Hr'g Tr. 29:7-10.) We are skeptical that our jurisdiction extends to what is ultimately a private contractual agreement between class counsel and an attorney who still has not entered a

Berkshire's reliance on Gross fares no better. Contrary to Berkshire's characterization (Letter from Jeremy Lieberman to the Court, Aug. 25, 2017, ECF No. 2240), the related lawyer's role in Gross had been disclosed: the related lawyer had been named as class counsel, Gross, 2017 WL 3668844, at *1, and a review of the docket shows that not only had the related lawyer entered a notice of appearance well before class certification, but the related lawyer had also been actively involved in litigating the case. He signed a number of the pleadings and motions papers filed by the plaintiff and made a number of court appearances on the putative class's behalf -- including presenting oral argument in opposition to defendants' motion to dismiss. (Gross, No. 14 Civ. 9438, ECF Nos. 1, 37, 44.) Accordingly, Gross's facts are simply not comparable to the facts here. Rather, under the factors identified in Gross which we analyze above, Mordchai Krausz's relationship with Berkshire and his father the CEO -- and his previously undisclosed 15% interest in any attorneys' fees awarded to Pomerantz -- suggests that Berkshire is not an adequate representative. The existence of a "large pool of disinterested investors who could serve as class representatives," In re IMAX, 272 F.R.D. at 157, which we presume to exist based on Berkshire's contention that there are "thousands of financial institutions"

notice of appearance in this case. But even if our jurisdiction does so extend, such a post hoc remedy would be no more effective than post-settlement fairness review in curing a first-order adequacy problem.

meeting the class definition (Berkshire Class Mem. 7), weighs further in favor of such a finding.

We are no more persuaded by Berkshire's additional authorities. In Elias and In re Cardizem, a named plaintiff had a parent-child relationship with a lawyer employed by one of the firms representing the putative class. Elias, 252 F.R.D. at 244; In re Cardizem, 200 F.R.D. at 337. Unlike those courts, our concern is not that "named plaintiffs would receive a benefit not available to other class members," Elias, 252 F.R.D. at 244, but rather that the class representative "might sacrifice the interests of the class for the benefit of class counsel." 5 Moore's Federal Practice § 23.25[2][b][vi] (3d ed. 2017); see also In re IMAX, 272 F.R.D. at 155-56. Further, there was no indication in those cases that the related lawyers were actively involved in litigating the case in which their relative was serving as named plaintiff, unlike Mordchai Krausz. See Elias, 252 F.R.D. at 244-45; In re Cardizem, 200 F.R.D. at 338. The firms in those cases also had a defined role, whereas Mordchai Krausz's role here remains unclear and limited at best. Additionally, the presence of multiple class representatives in those cases reduces the likelihood that a single named plaintiff -- like Berkshire here -- may conduct the litigation in an individually beneficial but

class-detrimental way.[144] Finally, the court in Zakaria explicitly acknowledged that "a relationship between the named plaintiff and class counsel can defeat adequacy of representation," but reasoned that "in general, more than such a relationship must be shown." 2016 WL 6662723, at *6. Here, Mordchai Krausz's 15% interest in class counsel's attorneys' fees provides that additional factor.

In sum, we conclude that Berkshire is not an adequate representative given the previously undisclosed relationship between Moses Krausz and Berkshire on the one hand and Mordchai Krausz on the other. "We do not suggest that [Berkshire's] representation would in fact be inadequate -- but the possibility of inadequacy and the appearance of impropriety are sufficient for us to deny certification of a class with [Berkshire] as [the only] representative." In re IMAX, 272 F.R.D. at 157.

2.2. Ascertainability

Lender defendants offer no challenge to the proposed class's ascertainability. Berkshire makes no reference to the implied requirement of ascertainability in its papers, but we nonetheless conclude that the proposed class is ascertainable. The proposed class definition's reference to certain transactions into which a putative class member must have entered serves as the "objective criteria that establish a membership with definite boundaries."

[144] Additionally, to the extent Berkshire relies on In re Cardizem to suggest that review of settlements for fairness under Rule 23(e)(2) may stand in for adequacy of representation under Rule 23(a)(4), we have rejected that contention.

In re Petrobras, 862 F.3d at 269. Though what exactly constitutes a "lending institution" is not entirely clear, the class definition is nonetheless not "indeterminate in some fundamental way" warranting a finding that the class is not ascertainable. Id.

2.3. Predominance

Because Berkshire is domiciled in New York, we analyze its claims under New York law.[145] See LIBOR V, 2015 WL 6696407, at *9-11, slip op. at *26-30. "Under New York law, to state a claim for fraud a plaintiff must demonstrate: (1) a misrepresentation or omission of material fact; (2) which the defendant knew to be false; (3) which the defendant made with the intention of inducing reliance; (4) upon which the plaintiff reasonably relied; and (5) which caused injury to the plaintiff." Wynn v. AC Rochester, 273 F.3d 153, 156 (2d Cir. 2001) (citing Lama Holding Co. v. Smith Barney, Inc., 88 N.Y.2d 413, 421 (1996)). Lender defendants argue that individual questions predominate because the proposed class raises "individualized issues of reliance, notice, and mitigation." (Lender Defs.' Class Opp'n 19.) We analyze these elements in turn.[146]

2.3.1. Misrepresentation, Knowledge of Falsity, and Intent

[145] We consider the issue of variations in state substantive law below.

[146] The parties do not address Berkshire's second claim, conspiracy to commit fraud. We accordingly do not consider that claim separately in analyzing predominance.

As we discuss in our analysis of commonality, the issue of misrepresentation and related issues of knowledge of falsity and intent are common questions: evidence establishing these elements will not differ substantially from class member to class member. See supra section IV.2.1.2.

2.3.2. Reliance

Though misrepresentation is a common question when "fraud claims [are] based on uniform misrepresentations to all members of the class," Moore, 306 F.3d at 1253, "[p]roof of misrepresentation -- even widespread and uniform misrepresentation -- only satisfies half of the equation," McLaughlin, 522 F.3d at 223.[147] The answer to "the other half, reliance on the misrepresentation" is not dictated by the first half. Id.; see also Hart v. BHH, LLC, No. 15 Civ. 4804 (WHP), 2017 WL 2912519, at *8 (S.D.N.Y. July 7, 2017). In denying Lender defendants' motion to strike Berkshire's class action allegations, we contemplated that "Lender plaintiffs may [be able to] use circumstantial evidence to show that they relied on LIBOR." Sept. 20, 2016 Order, slip op. at *4, ECF No. 1574. However, we also reasoned that "such evidence may be insufficient

[147] Berkshire's arguments relying solely on Moore accordingly conflate the issues of misrepresentation and reliance. Moore contrasted fraud claims based on uniform misrepresentations with fraud claims based on individualized misrepresentations and reasoned that the former were "appropriate subjects for class certification because the standardized misrepresentations may be established by generalized proof." 306 F.3d at 1253. That is, Moore addresses whether misrepresentation is a common question, not reliance. In light of McLaughlin, Moore cannot be read to suggest that all putative classes asserting fraud claims based on uniform misrepresentations must be certified.

in the face of, for instance, a showing that the Lender plaintiffs knew about or were indifferent to LIBOR suppression." Id.

We now conclude that reliance in this case is an individual question. "Reliance" on LIBOR (by issuing or holding a LIBOR-based loan) is distinct from (legal) reliance on LIBOR's accuracy. As we held in LIBOR IV, the reasonableness of a class member's reliance on LIBOR's accuracy "depends on each particular plaintiff's reasons for investing in LIBOR-based instruments, the alternatives available to each particular plaintiff, each particular plaintiff's ability to investigate the possibility of LIBOR manipulation, and how much credence a reasonable investor would have lent to news articles criticizing LIBOR." 2015 WL 6243526, at *67, slip op. at *168. Answering these questions will require the assessment of plaintiff-specific evidence.

First, different lenders had varying exposures to LIBOR, as some lenders often obtained funding at LIBOR-based interest rates in order to issue LIBOR-based loans. (Kelley Report ¶¶ 97-100; Ordover Repot ¶¶ 66-74.) The extent of a lender's reliance on LIBOR depends, at least in part, on the lender's exposure to LIBOR -- a lender with no net exposure to LIBOR is far more likely to have been indifferent to the level at which LIBOR is set, and is far less likely to have relied on LIBOR at all -- and a lender's net exposure to LIBOR cannot be determined without evidence specific to that lender.

Because of LIBOR's dual nature in the lending context, Berkshire's reliance on In re U.S. Foodservice and Osberg v. Foot Locker, Inc. is unavailing. In re U.S. Foodservice reasoned that "payment may constitute circumstantial proof of reliance upon a financial representation," 729 F.3d at 119, and Osberg extended this reasoning to hold that receipt of payment may similarly constitute circumstantial proof of reliance, see No. 07 Civ. 1358 (KBF), 2014 WL 5800501, at *6 (S.D.N.Y. Nov. 7, 2014). Neither case addresses a circumstance like that of an institutional lender that both makes and receives payments based on LIBOR.

Berkshire's reliance on cases in the federal securities context is similarly unavailing. We are skeptical that the federal securities framework is applicable to Berkshire's common law fraud claims, as the presumption of reliance often available in the securities fraud context is not available here. See LIBOR IV, 2015 WL 6243526, at *65, slip op. at *162 ("[T]he common law does not generally recognize a 'fraud on the market' theory of reliance."); see also Sec. Inv'r Prot. Corp. v. BDO Seidman, LLP, 222 F.3d 63, 73 (2d Cir. 2000) ("[C]ommon-law fraud claims require a different analysis than those brought under the federal securities regulation scheme.").

Similarly, lenders had different reasons for issuing LIBOR and had non-LIBOR alternatives for issuing loans.[148] For example, Berkshire's allegations regarding the omnipresence of LIBOR (Berkshire Class Reply 23) suggest that lenders may have relied on LIBOR despite knowledge of its inaccuracy, and Berkshire acknowledged that its selection of benchmark rates were "determined on a case-by-case basis" (Krausz Dep. 14:24-15:4).

Additionally, lenders likely had different understandings of what LIBOR represents, as evidenced by Berkshire's internally inconsistent views of LIBOR. Though Berkshire now advances a conception of LIBOR as strictly an "offered rate," (Berkshire Willig Mem.), its own representative testified that LIBOR represented "a rate at which the banks actually borrowed in the market" (Krausz Dep. 19:2-7). Berkshire's highly qualified expert witness Dr. Webb has advanced similarly inconsistent opinions on the meaning of LIBOR: in his initial report, for example, Dr. Webb refers to LIBOR as "the prevailing unsecured cost of USD denominated funds borrowed in the London interbank Money Market," opines that LIBOR suppression resulted when panel banks "submitt[ed] quotes which were lower than the rate at which they could actually borrow short term funds in the London inter-bank

[148] Further, we note that contrary to Berkshire's suggestion that a class member would not "have purchased LIBOR-based loans without relying on LIBOR" (Berkshire Class Reply 21), Dr. Webb opines that "the prices for floating rate loans/bonds are not affected" by LIBOR. (Webb Rebuttal Report ¶ 139.)

Money Market," and compares LIBOR submissions to "the actual rates paid by [panel banks] in their issuance of funding instruments linked to USD LIBOR." (Webb Initial Report ¶¶ 14-15, 41.) His rebuttal report, by contrast, emphasizes LIBOR's nature as an offered rate. (Webb Rebuttal Report ¶¶ 52-55.) Given Dr. Webb's lack of consistency on this point and our broader conclusion that the text of the LIBOR question is at least somewhat ambiguous, see supra section III.2.3.1.2, we conclude that lenders having different understandings of LIBOR is not a speculative improbability.

Finally, lenders may have had knowledge of alleged LIBOR suppression. As we held in LIBOR IV, "news articles in Spring 2008 revealed a meaningful probability that LIBOR had been, and continued to be, manipulated," 2015 WL 6243526, at *67, slip op. at *168, and our conclusion that certain lenders may have had knowledge is buttressed by Berkshire's and Dr. Webb's comparison of LIBOR to other publicly available interest rates that correlated closely to LIBOR prior to the alleged suppression. (E.g., SAC ¶¶ 81-97.) To the extent that certain lenders monitored comparable interest rates, this exercise of diligence would tend to undermine any claim of reliance. See McLaughlin, 522 F.3d at 226 ("[D]ifferences in plaintiffs' knowledge and levels of awareness [may] also defeat the presumption of reliance."). The fact that some of the lenders captured in the class definition are

sophisticated financial institutions -- including some that participated in the interbank lending market -- suggests that the probability that some class members had knowledge is not as speculative as Berkshire suggests it to be. (Ordover Report ¶¶ 66-74.)

Accordingly, we conclude that assessing reliance would require extensive consideration of lender-specific evidence and is an individual question. The uncontroverted evidence in the record (and Berkshire's own testimony) hardly resembles the "bald speculation" found insufficient to render reliance an individual question in In re U.S. Foodservice, 729 F.3d at 122.

2.3.3. Statutes of Limitations

Lender defendants contend that statutes of limitations introduce additional individual questions. Berkshire responds, citing In re Baldwin-United Corp. Litigation, 122 F.R.D. 424, 427-28 (S.D.N.Y. 1986), that we should not consider the issue in analyzing predominance because, as a threshold matter, the "existence of affirmative defenses regarding statute of limitations is 'outside the scope of Rule 23.'" (Berkshire Class Reply 24 n.18).

This contention is erroneous as a matter of law. As a general matter, the Second Circuit has made clear that an assessment of predominance requires consideration of the "elements of the claims and defenses to be litigated." Nextel, 780 F.3d at 138 (emphasis

added) (quoting 1 McLaughlin on Class Actions § 5:23 (11th ed. 2014)); see also In re Visa Check, 280 F.3d at 138 ("[A] court must examine the relevant facts and both the claims and defenses in determining whether a putative class meets the requirements of Rule 23(b)(3)." (emphasis added)). Though "the question for purposes of determining predominance is not whether a defense exists, but whether the common issues will predominate over the individual questions raised by that defense," In re Visa Check, 280 F.3d at 138, affirmative defenses may, and must, be considered in the predominance analysis.

Statutes of limitations are no exception to this general rule. In holding that statutes-of-limitations issues were beyond the scope of Rule 23, In re Baldwin-United interpreted the Supreme Court's decision in Eisen v. Carlisle & Jacquelin, 417 U.S. 156 (1974), to forbid the consideration of any merits issues at the class certification stage. See In re Baldwin-United, 122 F.R.D. at 427. That interpretation of Eisen, of course, has since been disavowed by the Second Circuit in In re IPO, see 471 F.3d at 41, and by the Supreme Court in Dukes, see 564 U.S. at 351 & n.6.

In re Community Bank of Northern Virginia & Guaranty National Bank of Tallahassee Second Mortgage Loan Litigation, on which Berkshire mistakenly relies, cogently explains the point. In that case, the Third Circuit questioned (rather than ratified) certain courts' "refus[al] to consider statute-of-limitations issues at

the class certification stage," reasoning that Eisen could no longer be read to bifurcate entirely consideration of Rule 23 requirements from consideration of the merits. 622 F.3d 275, 292-93 (3d Cir. 2010). Rather, as the Third Circuit stated, "[s]ituations abound where statute-of-limitations issues overlap with certain of the Rule 23 requirements." Id. at 293. Indeed, "defendants may oppose class certification on the ground that class members with untimely claims must rely on equitable tolling to save their claims, which presents an individual question of law and fact that could predominate over common questions under Rule 23(b)(3), or challenge the predominance requirement in light of the 'presence of idiosyncratic statute-of-limitations issues' among the laws of various states in a nationwide class action." Id. at 293-94 (quoting Waste Mgmt. Holdings, Inc. v. Mowbray, 208 F.3d 288, 295-96 (1st Cir. 2000)).

Indeed, the timeliness of a class member's claim presents an individual issue in this case. Contrary to Berkshire's suggestion (Berkshire Class Reply 24-25), any statute-of-limitations issues impacting the class here are not reducible simply to a question of inquiry notice. Even assuming inquiry notice operates on a classwide basis,[149] inquiry notice is of course only one form of

[149] To the extent the Second Circuit held in Schwab that an assessment of whether a plaintiff relied on the BBA's assurances regarding the accuracy of LIBOR is necessary to the statute of limitations inquiry, this additional consideration would confirm that statute-of-limitations issues are individual in nature.

notice; actual notice is no less effective at starting the limitations clock. See, e.g., N.Y. C.P.L.R. § 213(8). Berkshire fails to explain how evidence of actual notice may be presented on anything other than a class member-specific basis, and we accordingly conclude that statute of limitations also presents an individual question.

While an affirmative defense "affect[ing] different class members differently . . . does not compel a finding that individual issues predominate," In re Nassau Cty., 461 F.3d at 225 (quoting In re Visa Check, 280 F.3d at 138), the varying applicability of affirmative defenses indisputably weighs on the individual question side of the scale. None of Berkshire's cited authorities -- many of which, including In re Baldwin-United, have been abrogated by In re IPO and Dukes -- establishes the contrary. Cf. Waste Mgmt., 208 F.3d at 296 (noting that while "variations in the sources and application of statutes of limitations will not automatically foreclose class certification under Rule 23(b)(3)," the "necessity for individualized statute-of-limitations determinations invariably weighs against class certification under Rule 23(b)(3)" (emphasis added)).

2.3.4. Damages

Though damages is necessarily an individual question (at least to some extent) in all cases, we find that it is a question of greater significance in this case than in others. Individual

inquiry will be required into, at minimum, four aspects of determining damages: (1) what alternative rate a plaintiff would have used, (2) what spread would have been used (and what other terms of the loan would have been) had LIBOR not been suppressed, (3) the presence and applicability of interest-rate floors, and (4) netting against benefits received from other LIBOR-based instruments.[150]

First, we held in LIBOR V that New York adheres to an out-of-pocket damages rule, the application of which requires a determination of the alternatives that each plaintiff would have used for each loan.[151] See 2015 WL 6696407, at *9-11, slip op. at

[150] Mitigation presents an additional individualized damages issue, though Lender defendants present mitigation as an affirmative defense. In New York, "a party who claims to have suffered damage by the tort of another is bound 'to use reasonable and proper efforts to make the damage as small as practicable,' and if an injured party allows the damages to be unnecessarily enhanced, the incurred loss justly falls upon him." Williams v. Bright, 230 A.D.2d 548, 550 (1st Dep't 1997) (quoting Blate v. Third Ave. R.R. Co., 44 A.D. 163, 167 (1st Dep't 1899)). This assessment of what mitigation would have been "reasonable and proper" is almost necessarily individualized, since it depends on what "practicable" options were available to each lender in order to minimize its damages. Berkshire may very well be correct that in many instances, a lender would not have been required to mitigate its damages (Berkshire Class Reply 25 n.20), but its argument does not challenge the notion that an assessment of what is reasonable and proper will be plaintiff-specific.

[151] Berkshire did not move for reconsideration of LIBOR V, and none of the authorities on which they rely in advocating for reconsideration represent intervening changes in law. We are thoroughly disinclined to reconsider LIBOR V given this delay, but even if we were inclined to reconsider, we would be unpersuaded that cases addressing fraud damages resulting from the purchase and sale of securities under federal law have bearing on the issuance of loans under New York law. See BDO Seidman, 222 F.3d at 73 ("[C]ommon-law fraud claims require a different analysis than those brought under the federal securities regulation scheme."). Indeed, we read the Second Circuit's Schwab opinion to be in considerable tension with Berkshire's argument, reliant on federal securities law, that its damages should be calculated only as the difference between interest payments received based on actual LIBOR and interest payments received based on but-for LIBOR. See Schwab, 2018 WL 1022541, at *15 ("[T]o the extent [a plaintiff] seeks to impose liability for false LIBOR submissions that affected the amount of money it received on instruments it had already

*26-30. The record establishes not only that other benchmark rates are available, (Lukens Dep. 143:9-25, 240:7-14; Decl. of Paul Mishkin ex. 18, July 3, 2017, ECF No. 2025), but also that a given loan may be tied to multiple interest rates and not only LIBOR (Ordover Report ¶ 80).

Second, the evidence shows that a floating-rate loan's spread above or below the benchmark rate is subject to negotiation. (Ordover Report ¶¶ 39-40.) Indeed, Berkshire's representative testified that its loans were "individually negotiated," that spreads may be sensitive to changing interest rates, and that "negotiation could be over what benchmark to use as well as over the spread." (Lukens Dep. 36:5-7, 143:12-16, 240:4-6, 271:4-6.)

Third, the record establishes that lenders -- including Berkshire itself -- frequently use interest-rate floors to guard against fluctuations in interest rates. (Kelley Report ¶¶ 102-14.) The inclusion of an interest-rate floor in a loan will tend to reduce the amount of damages attributable to that loan, as the floor places an upper bound on the impact that LIBOR suppression may have had.

Fourth, consistent with our dismissal of Highlander Realty in LIBOR V, 2015 WL 6696407, at *22-24, slip op. at *61-63, a lender's net exposure to LIBOR is plainly relevant in considering damages.

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purchased, its claims fail. . . . Defendants' LIBOR submissions, possibly occurring months after [the plaintiff] purchased a particular security, bore no relation to that original purchase." (emphasis omitted)).

As we have held, "a plaintiff both injured and enriched by illegal activity cannot choose to recover for his injuries yet retain his windfall" where "both result from a single wrong." Minpeco, 676 F. Supp. at 488 (emphasis omitted) (citing Abrahamson, 568 F.2d at 878). While we are cognizant of "the goal of deterrence" and avoiding unjust enrichment of the defendant, Gordon, 92 F. Supp. 3d at 202, an undeserved windfall to a plaintiff would be equally inappropriate, see Minpeco, 676 F. Supp. at 488. Netting in this case merely represents the economic reality that financial institutions hold both LIBOR-based assets and LIBOR-based liabilities (Kelley Report ¶¶ 97-100), cf. LIBOR VI, 2016 WL 7378980, at *3, slip op. at *6 ("Contrary to Shakespeare's advice, 'Neither a borrower nor a lender be,' the defendant banks are both."), with a perfectly hedged entity such as Highlander being a particularly stark example.[152]

Berkshire contends that Dr. Webb's model can be applied to calculate damages regardless of what alternative a lender would have used, adapted to take into account the effect of loan features such as interest-rate floors, and extended to calculate the effect of LIBOR suppression on other LIBOR-based instruments. (Berkshire Class Reply 16-19.) We excluded Dr. Webb's damages opinions under Daubert, but taking these excluded opinions into account would not

[152] We also find Berkshire's reliance on Randall, 478 U.S. 647, unpersuasive for the reasons we have previously expressed. See supra section III.3.5.4.

alter our conclusion. Even accepting that but-for LIBOR is susceptible to class-wide calculation, individual issues remain in determining which alternative rate a plaintiff would have used, what the but-for spread on each loan would have been, what other terms the loan would have contained (including interest-rate floors), and which other instruments should be taken into account in the netting calculation.[153] The problem is not how to perform the numerical calculations once those plaintiff-specific unknowns have been determined, which the subject that Dr. Webb's excluded opinions address.

The more plaintiff-specific information that must be collected from each class member, the more significant the issue of damages becomes as an individual question. See Megason v. Starjem Restaurant Corp., No. 12 Civ. 1299 (NRB), 2014 WL 113711, at *6 (S.D.N.Y. Jan. 13, 2014) ("[A] class action may be certified if the plaintiffs present a damages model capable of calculating damages on a class-wide basis, notwithstanding the 'feasibility-related issue [of] the potential need for manual input' of certain limited information." (emphasis added) (second alteration in original) (quoting In re U.S. Foodservice, 729 F.3d at 130)); cf. Tyson Foods, 136 S. Ct. at 1045 ("An individual question is one

[153] Dr. Webb opines that the necessary data may be "extracted in a systematic and comprehensive manner" because lenders tend to be "regulated financial institutions or institutional entities with appropriate bookkeeping and trade capture systems." (Webb Rebuttal Report ¶ 120.) Dr. Webb cites nothing in support of this opinion and we give it correspondingly little weight.

where 'members of a proposed class will need to present evidence that varies from member to member.'" (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:50 (5th ed. 2012))). Because damages cannot be calculated here absent considerable inquiry into each loan held by each plaintiff, damages is an individual question of substantial magnitude.

2.3.5. Variations in State Law

As a threshold matter, Berkshire contends that issues of variation in state substantive law are strictly ones of manageability and not predominance. (Berkshire Class Reply 26-29.) The law counsels otherwise. "[V]ariations in state law may swamp any common issues and defeat predominance." In re U.S. Foodservice, 729 F.3d at 127 (quoting Castano, 84 F.3d at 741); see also In re AIG, 689 F.3d at 242 ("[O]ne of the 'matters pertinent' to a finding of predominance is 'the likely difficulties in managing a class action.'" (quoting Fed. R. Civ. P. 23(b)(3)(D)). We accordingly consider whether variations in how fraud is defined under substantive state laws introduce additional individual questions tending to defeat predominance.

"When claims in a class action arise under state law -- and the class comprises multiple states -- the court must consider whether different state laws will apply to different members of the class." Nextel, 780 F.3d at 140. "[I]f the forum state's choice-of-law rules require the application of only one state's

laws to the entire class, then the representation of multiple states within the class does not pose a barrier to class certification." Id. at 141. We therefore assess whether New York's choice-of-law rules require the application of the substantive laws of other states, see id. (citing Klaxon v. Stentor Elec. Mfg. Co., 313 U.S. 487, 496 (1941)), and conclude (consistent with our prior holdings) that the class's claims are subject to the substantive fraud law of different states, see LIBOR IV, 2015 WL 6243526, at *50, slip op. at *126 ("For the most part, New York law applies, but the parties agree that California, New Jersey, Pennsylvania, Texas, or Virginia law applies to some cases and plaintiffs.").

Under New York's choice-of-law rules, "the first question to resolve in determining whether to undertake a choice of law analysis is whether there is an actual conflict of laws." Curley v. AMR Corp., 153 F.3d 5, 12 (2d Cir. 1998) (citing In re Allstate Ins. Co. (Stolarz), 81 N.Y.2d 219, 223 (1993)). "[I]f there is a conflict of laws, New York courts apply an 'interests analysis,' under which the law of the jurisdiction having the greatest interest in the litigation is applied." Id. (citing, inter alia, Babcock v. Jackson, 12 N.Y.2d 473, 481 (1963)).

Applying this test, the Appellate Division and numerous courts in this district have concluded that fraud claims are governed by the law of the state in which the injury occurred,

which is where the plaintiff maintains its principal place of business. See, e.g., Tradex Glob. Master Fund SPC LTD v. Titan Capital Grp. III, LP, 95 A.D.3d 586, 587 (1st Dep't 2012) ("[P]laintiffs' fraud claim[] is governed by Connecticut law since plaintiffs' principal place of business is in that state."); Dhir v. Carlyle Grp. Emp. Co., No. 16 Civ. 6378 (RJS), 2017 WL 4402566, at *4 (S.D.N.Y. Sept. 29, 2017); Odyssey Re (London) Ltd. v. Stirling Cooke Brown Holdings Ltd., 85 F. Supp. 2d 282, 292 (S.D.N.Y. 2000), aff'd, 2 F. App'x 109 (2d Cir. 2001). The Second Circuit has also so held in a nonprecedential opinion. Nat'l W. Life Ins. Co. v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 89 F. App'x 287, 288 (2d Cir. 2004) ("Under New York conflict of law principles, fraud claims are governed by the state in which the injury is deemed to have occurred, which is usually where the plaintiff is located."); cf. Geren v. Seyfarth Shaw LLP (In re Thelen LLP), 736 F.3d 213, 220 (2d Cir. 2013) ("[F]or claims based on fraud, the locus of the tort is generally deemed to be the place where the injury was inflicted, rather than where the fraudulent act originated."). Each putative class member's fraud claim is therefore subject to the law of the state of its principal place of business, and we proceed to analyze the substantive differences in fraud causes of action.

"[P]utative class actions involving the laws of multiple states are often not properly certified pursuant to Rule 23(b)(3)

because variation in the legal issues to be addressed overwhelms the issues common to the class." In re U.S. Foodservice, 729 F.3d at 126-27. Accordingly, "courts routinely deny class certification because plaintiffs' claims would require application of the substantive law of multiple states." In re Currency Conversion Fee Antitrust Litig., 230 F.R.D. 303, 311 (S.D.N.Y. 2004). Nonetheless, "the specter of having to apply different substantive laws does not necessarily warrant refusing to certify a class." Rodriguez v. It's Just Lunch, Int'l, 300 F.R.D. 125, 140 (S.D.N.Y. 2014) (alterations incorporated and internal quotation marks omitted). "[N]ationwide class action movants must creditably demonstrate, through an extensive analysis of state law variances, that class certification does not present insuperable obstacles." In re U.S. Foodservice, 729 F.3d at 127 (alteration in original) (internal quotation marks omitted) (quoting Walsh v. Ford Motor Co., 807 F.2d 1000, 1017 (D.C. Cir. 1986)). As we previously noted in denying Lender defendants' motion to strike Berkshire's class-action allegations, it appears that "material differences exist between state fraud laws and that proving predominance and superiority will be challenging." Sept. 20, 2016, Order, slip op. at *3. In particular, Lender defendants argue that state substantive law varies along three dimensions: reliance, statutes of limitations, and damages.

A first dimension of variation in state substantive law is reliance. As Lender defendants correctly point out, state substantive law varies materially on what suffices to establish reliance and when a would-be plaintiff is charged with a duty to investigate. Berkshire responds that states' substantive standards on reliance fall into only two categories. (Berkshire Class Reply 26-27.)

This response is an oversimplification and is belied by the first appendix to Berkshire's reply brief, which purports to catalog 52 jurisdictions' reliance standards. (Berkshire Class Reply 26 n.21.) We do not canvass Berkshire's state-law appendices for accuracy, but we are skeptical that Berkshire has in fact characterized state law correctly in all instances. For example, Oklahoma appears to impose an absolute duty to investigate, rather than a duty to investigate only if facts make it obvious to the plaintiff that the representation is not true as Berkshire suggests. See Silver v. Slusher, 770 P.2d 878, 882 n.8 (Okla. 1988) ("An action for fraud may not be predicated on false statements when the allegedly defrauded party could have ascertained the truth with reasonable diligence."). Similarly, West Virginia appears to impose a duty to investigate in cases of obvious falsity, rather than possible falsity as Berkshire suggests. See Kidd v. Mull, 595 S.E.2d 308, 316 (W. Va. 2004) (describing as "consistent" with West Virginia law the formulation

of reliance in the Restatement (Second) of Torts: "if [the plaintiff] knows that [the misrepresentation] is false or its falsity is obvious to him").[154]

But even accepting Berkshire's characterization of state substantive law, the first appendix shows three different standards, not two: (1) a "[d]uty to investigate if the plaintiff is aware of facts indicating the representation may be false"; (2) a "[d]uty to investigate only if facts make it obvious to the plaintiff that the representation is not true"; and (3) an unqualified duty to investigate. (Berkshire Class Reply app. I. (emphasis omitted))

Within these broad categories, different states also impose varying standards. For example, within the first broad category (states imposing a duty to investigate if the plaintiff is aware of facts indicating the representation may be false), Iowa, Missouri, South Carolina, and Tennessee appear to consider certain characteristics of the plaintiff while Colorado, Georgia, Illinois, New York, Ohio and Virginia apply a strictly objective standard. Compare, e.g., Spreitzer v. Hawkeye State Bank, 779

[154] Berkshire's extensive reliance on state trial court decisions also does little to reassure us of the accuracy of its state-law appendices, particularly when states' highest courts or intermediate appellate courts have addressed the questions at issue. Cf. Levin v. Tiber Holding Corp., 277 F.3d 243, 253 (2d Cir. 2002) ("[T]his Court, sitting in diversity, must follow the holdings of [a state's highest court] and must reject inconsistent rulings from its lower courts."); County of Westchester v. Comm'r of Transp., 9 F.3d 242, 245 (2d Cir. 1993) ("[T]he highest court of a state has the final word on the meaning of state law." (internal quotation marks omitted)).

N.W.2d 726, 737 (Iowa 2009) (considering "the sophistication and expertise of the plaintiff in financial . . . matters" (omission in original)), with, e.g., Schur v. Sprenkle, 84 Va. Cir. 418 (2012) (referring to "the ordinary experience of mankind" more broadly (emphasis omitted)). Similarly, within the second broad category (states imposing a duty to investigate only if the facts make it obvious that the representation is not true), California, Kansas, Nevada, North Dakota, and Utah consider obviousness based on a person of comparable "intelligence" or "experience," whereas Rhode Island appears to apply a strictly objective "reasonable person" standard. Compare, e.g., Collins v. Burns, 741 P.2d 819, 821 (Nev. 1987) (referring to "any normal person of his intelligence and experience"), with, e.g., Boisse v. Miller, No. WC 2003-0281, 2013 WL 4235342, at *17 (R.I. Super. Aug. 8, 2013) (referring only to "a reasonable person").

A second dimension of variation in state substantive law is the statute of limitations. In LIBOR IV, we remarked that "[t]he states apply many variations on the 'discovery' theme, so we must analyze the discovery rules of each state separately." LIBOR IV, 2015 WL 6243526, at *126, slip op. at *302. Berkshire counters that variations in discovery rules and notice standards present no predominance issue, asserting that we have previously held that in the context of discovery rules, "constructive notice occurred as to all class members (except under California law) on May 29, 2008"

(Berkshire Class Reply 27).[155] Berkshire does not explain why such a holding precludes actual notice to a plaintiff prior to May 29, 2008 or why this holding alleviates our concern regarding variations in statutes of limitations and discovery rules (which, as we have held, some states do not apply at all). See LIBOR IV, 2015 WL 6243526, at *126-33, slip op. at *303-17 (analyzing state-by-state variations in statutes of limitations and discovery rules).[156] Further, as Berkshire concedes (Berkshire Class Reply 27), California's treatment of inquiry notice based on news articles is unique, see LIBOR IV, 2015 WL 6243526, at *127, slip op. at *306-07, and the Second Circuit has emphasized that this assessment requires analysis of when "the plaintiff was aware of the reporting in question," Schwab, 2018 WL 1022541, at *19

[155] Berkshire does not reference a particular holding, but we presume this statement refers either to our holding in LIBOR IV that "exchange-based plaintiffs were on constructive notice of news articles relating to LIBOR by May 29, 2008" under federal law, LIBOR IV, 2015 WL 6243526, at *133, slip op. at *319 (emphasis added), or to our holding in LIBOR V that "we consider [a now-dismissed Lender plaintiff] to have been on inquiry notice by May 29, 2008" under Puerto Rico law, LIBOR V, 2015 WL 6696407, at *12, slip op. at *34.

[156] Lender defendants also suggest that the extent to which states recognize class-action tolling, and the extent to which states recognize cross-jurisdictional tolling in particular, introduces another degree of variation under the broad umbrella of statutes of limitations. (Lender Defs.' Class Opp'n 27.) Because we are to apply state class-action tolling law when analyzing claims asserted under state law, see Casey v. Merck & Co., 653 F.3d 95, 100 (2d Cir. 2011), we engaged in an extensive analysis of cross-jurisdictional tolling in LIBOR IV, see 2015 WL 6243526, at *138-47, slip op. at *329-49. But cross-jurisdictional tolling is not implicated in this context: the operative question is whether the filing of this putative class action in this district would, under the law of the 56 jurisdictions, toll the applicable statute of limitations for each absent class member in a suit in this district. Therefore, class-action tolling is implicated only to the extent a state does not recognize class-action tolling at all.

(emphasis added), which in turn requires plaintiff-specific evidence.

A third dimension of variation in state substantive law is the damages methodology that is to be applied. Lender defendants correctly identify that some states always apply a "benefit of the bargain" rule, some states (like New York) always apply an "out of pocket" rule, and other states allow for either measure of damages depending on the circumstances.[157] (Lender Defs.' Class Opp'n 27.) Berkshire acknowledges the difference between benefit-of-the-bargain damages and out-of-pocket damages, but contends that 48 of 52 jurisdictions apply benefit-of-the-bargain while the remaining four apply out-of-pocket. (Berkshire Class Reply 27.)

This response is again an oversimplification and is again belied by Berkshire's state-law appendices. While the ultimate amount of damages in each state is calculated using two different formulae, complexity nonetheless arises in determining which rule to apply in the states allowing both forms of damages. And indeed, states differ in that decision rule: for example, according to Berkshire's own state-law appendix, Ohio defaults to the out-of-pocket rule while Washington defaults to the benefit-of-the-

[157] Lender defendants additionally suggest that the substantive law of mitigation also differs across states, though they do not identify any specific conflicts. (Lender Defs.' Class Opp'n 24.) Berkshire does not respond to this contention, but suggests instead that mitigation is irrelevant. (Berkshire Class Reply 25 n.20.) We reject the notion that mitigation is irrelevant to the damages analysis and conclude that to the extent state laws in fact differ on the issue of mitigation, such variation would introduce a further layer of complexity into the state-by-state damages analysis.

bargain rule. Compare, e.g., Northpoint Props. v. Charter One Bank, 2011-Ohio-2512, ¶ 34 (Ct. App. 8th Dist. 2011) ("The out-of-pocket rule is normally applied to determine the measure of damages for a fraudulent misrepresentation."), with, e.g., Enger v. Richards, 134 Wash. App. 1068 (1st Div. 2006) ("Courts generally apply the benefit of the bargain rule when plaintiffs seek recovery for general damages caused by misrepresentation or fraud.").

In sum, we conclude that variations in state substantive law introduce individual questions along at least three dimensions and therefore weigh against a finding of predominance.[158] Berkshire's state law appendices fall short of the "extensive analysis" needed to establish that variations in state law do not present "insuperable obstacles" to certification. In re U.S. Foodservice, 729 F.3d at 127.

2.3.6. Conclusion

Common issues do not predominate over individual ones. While the question of misrepresentation is a common issue, this common question is outweighed by the individual questions presented by reliance, damages, affirmative defenses, and variation in state

[158] In analyzing variations in state law, we have generally set aside the question of whether "[d]ifferent legal standards are masquerading behind similar legal labels." 18 Charles A. Wright et al., Federal Practice & Procedure § 4417 (3d ed.) (Westlaw 2017). As the Supreme Court has recognized in analyzing preclusion, courts in different jurisdictions may apply identically worded provisions differently, see Smith v. Bayer Corp., 564 U.S. 299, 309 (2011), and these differences would amplify the variations we have already identified. While this concern is somewhat alleviated in this context because state substantive law need not be exactly identical to permit grouping, the likelihood remains that different states will interpret terms that are identical or similar terms in sufficiently different ways such that grouping would be improper.

laws. Though the presence of any one of these individual questions may be insufficient to support a finding of no predominance standing alone, see, e.g., Roach, 778 F.3d at 408; In re Nassau Cty., 461 F.3d at 225; Hart, 2017 WL 2912519, at *8, these individual questions, when taken together, significantly outweigh common ones.

2.4. Superiority

Finally, we consider whether class-action status in this case would be superior to the maintenance of individual actions. Our analysis is again guided by the factors set forth in Rule 23(b)(3).

We find that the second factor, the extent and nature of any litigation already begun, and the third factor, the desirability of concentrating litigation in this forum, support a finding of superiority. Only a limited number of suits advancing a loan-based theory of injury attributable to LIBOR suppression were commenced, and concentration here is desirable for the reasons stated by the JPML in creating this multidistrict litigation in the first instance. See In re LIBOR-Based Fin. Instruments Antitrust Litig., 802 F. Supp. 2d at 1381.

As to class members' interests in individually controlling the prosecution of separate actions under Rule 23(b)(3)(A), we are less confident that a class action is superior simply because the cost of prosecuting a separate action would exceed damages to each class member. (Berkshire Class Mem. 22, 26.) Indeed, the argument

that superiority is established simply because individual actions "may not be pursued, [and] would be less efficient and lead to conflicting results," begs the superiority question and proves far too much: this reasoning could be deployed in almost every putative class action. As we explained in analyzing superiority in the Exchange-based action, this case does not resemble the type of consumer fraud class actions where damages are small in magnitude for each class member but certain in existence. See supra section III.3.6.

But even absent this skepticism, a class action is not superior because of manageability problems presented by the absence of predominance and the presence of variations in state law. See Sykes, 780 F.3d at 82 ("[M]anageability 'is, by the far, the most critical concern in determining whether a class action is a superior means of adjudication.'" (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:72 (5th ed.) (Westlaw 2014)). As we explain above, Berkshire has not established that certification of a nationwide class "does not present insuperable obstacles" to management. In re U.S. Foodservice, 729 F.3d at 127. The creation of 56 subclasses (for 50 states plus 6 territories) would be unmanageable, see Manual for Complex Litigation § 21.23 (4th ed. 2004) ("The creation of a number of subclasses . . . may make the case unmanageable [and] may defeat the superiority requirement."), and Berkshire has not sufficiently

established that grouping would alleviate our concerns about variations in state substantive law or that such grouping -- which would occur along three different dimensions -- would be manageable. "While numerous courts have talked-the-talk that grouping of multiple state laws is lawful and possible, very few courts have walked the grouping walk." In re Pharm. Indus. Average Wholesale Price Litig., 252 F.R.D. 83, 94 (D. Mass. 2008).

Anticipating this issue, Berkshire contends that any manageability concerns are overblown. (Berkshire Class Reply 28.) Berkshire invokes the Second Circuit's identification of "a number of management tools available to a district court to address any individualized damages issues that might arise in a class action, including: (1) bifurcating liability and damage trials with the same or different juries; (2) appointing a magistrate judge or special master to preside over individual damages proceedings; (3) decertifying the class after the liability trial and providing notice to class members concerning how they may proceed to prove damages; (4) creating subclasses; or (5) altering or amending the class." In re Visa Check, 280 F.3d at 141 (footnote omitted).

These tools address our manageability concerns, which are rooted in variations in state substantive law, only minimally. The first three pertain to individualized issues of damages and are not responsive. We have also rejected the creation of numerous subclasses, as the number of state-law subclasses required here

would remain generally unmanageable. And finally, because Berkshire offers no serious argument that we should consider modification of the class definition or issue certification, we will not consider whether those approaches would be viable in this action. See Lundquist, 993 F.2d at 14.

2.5. Conclusion

Berkshire's motion to certify a Lender class is denied. While Berkshire has established the numerosity, commonality, and typicality requirements of Rule 23(a)(1) through (3), we find that Berkshire would not be an adequate representative based on the previously undisclosed fee arrangement between Mordchai Krausz and interim class counsel. While our doubts about Berkshire's adequacy as a class representative is sufficient to preclude certification, the joinder of additional named plaintiffs that would fairly and adequately represent the class still would not render class certification appropriate, as we also conclude that common questions do not predominate over individual ones and that class-action status would not be superior to the maintenance of individual actions.[159]

[159] Though it does not affect our resolution of the motions, the parties are reminded that this Court's individual rules of practice and Local Civil Rule 11.1(b)(3) specify the formatting to be applied to motions papers, including memoranda of law: "all text must be double-spaced, except for headings, text in footnotes, or block quotations, which may be single-spaced." Double-spaced means double-spaced. Not 1.9x spaced, not 1.8x spaced, and certainly not approximately 1.75x spaced as Berkshire's papers are.

V. OTC ACTION

OTC plaintiffs seek certification of a class defined as follows:

> All persons or entities residing in the United States that purchased, directly from a Panel Bank (or a Panel Bank's subsidiaries or affiliates), a LIBOR-Based Instrument that paid interest indexed to a U.S. dollar LIBOR rate set any time during the period August 2007 through August 2009 ("Class Period") regardless of when the LIBOR-Based Instrument was purchased.

The proposed class definition in turn defines "LIBOR-Based Instrument" and excludes certain entities and individuals associated with panel banks:

> "LIBOR-Based Instrument" means an interest rate swap or bond/floating rate note that includes any term, provision, obligation or right for the purchaser or counterparty to be paid interest by a Panel Bank (or a Panel Bank's subsidiaries or affiliates) based upon the 1 month or 3 month U.S. dollar LIBOR rate. For the avoidance of doubt, the term LIBOR-Based Instrument does not include instruments on which a Panel Bank (or a Panel Bank's subsidiaries or affiliates) does not pay interest, such as bonds/floating rate notes issued by entities other than Panel Banks (or Panel Banks' subsidiaries or affiliates). Nor does the term include instruments that include only a term, provision, or obligation requiring the purchaser or counterparty to pay interest, such as business, home, student or car loans, or credit cards.
>
> Excluded from the class are panel banks and their employees, affiliates, parents, and subsidiaries and any judicial officers and staff presiding over this action. "Panel Bank" means Bank of America, Bank of Tokyo Mitsubishi, Barclays Bank, Citibank, Credit Suisse, Deutsche Bank, HBOS, HSBC, JPMorgan, Lloyds, Norinchukin, Rabobank, Royal Bank of Canada, Royal Bank of Scotland, Societe Generale, UBS, and West LB (n/k/a Portigon).

The operative Corrected Third Consolidated Amended Complaint identifies six named plaintiffs: the Mayor and City Council of Baltimore, Maryland; the City of New Britain, Connecticut; Vistra Energy Corp.; Yale University; Jennie Stuart Medical Center, Inc.; and SEIU Pension Plans Master Trust (SEIU). (Corrected Third Consolidated Am. Compl. ("CTAC") ¶¶ 12-17, Apr. 20, 2017, ECF No. 1857.) Because OTC plaintiffs' claims may be asserted only against panel banks with which named plaintiffs transacted,[160] panel banks Bank of America, Barclays, Citi, Credit Suisse, Deutsche Bank, JPMorgan Chase, Royal Bank of Canada (RBC), and UBS (and certain affiliates of these panel banks) are named as defendants (collectively, "OTC defendants"); the remaining panel banks are not. (CTAC ¶¶ 18-39.)

OTC plaintiffs assert three claims: antitrust claims under the Sherman Act, breach of the implied covenant of good faith and fair dealing under state law, and unjust enrichment under state law. (CTAC ¶¶ 378-409.) The state-law claims were asserted against all defendants, but our rulings in LIBOR VI dismissed the

[160] This limitation derives from two sources: first, our holding in LIBOR III that OTC plaintiffs lack Article III standing to assert claims against panel banks with which they did not transact, see LIBOR III, 27 F. Supp. 3d at 482, slip op. at *67 ("[OTC] plaintiffs' [state law] claims against non-counterparty banks do not meet the threshold Article III standing requirements." (citing NECA, 693 F.3d at 159)); see also NECA, 693 F.3d at 159 ("[T]o establish Article III standing in a class action . . . for every named defendant there must be at least one named plaintiff who can assert a claim directly against that defendant." (omission in original) (quoting Merck-Medco, 504 F.3d at 241)); and second, our holdings in LIBOR VI that a plaintiff who did not transact with a panel bank is not an efficient enforcer of the antitrust laws against that panel bank and therefore lacks antitrust standing to assert antitrust claims against that panel bank, see LIBOR VI, 2016 WL 7378980, at *16, slip op. at *42.

antitrust claims against all defendants except Bank of America, Citi, and JPMorgan Chase, see 2016 WL 7378980, at *25, slip op. at app. A-1.

In June 2017, SEIU sought to withdraw as a named plaintiff. (Letter from William Carmody to the Court, June 15, 2017, ECF No. 1981.) We granted this request, see June 26, 2017 Order, ECF No. 1992, which resulted in none of the remaining named plaintiffs having transacted with Credit Suisse or RBC. We allowed the substitution of the Bucks County Water and Sewer Authority ("Bucks County") as a named plaintiff, which thereby preserved the class's Article III standing against RBC.[161] See Sept. 8, 2017 Order, 2017 WL 4174925, ECF No. 2256. We also dismissed, consistent with our holding in LIBOR III, Credit Suisse as a defendant. See Sept. 29, 2017 Order, ECF No. 2291.[162]

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[161] No amended complaint incorporating Bucks County's claims against RBC has yet been filed.

[162] When we allowed Bucks County's substitution, we cautioned that the withdrawal of SEIU presented "a unique situation which required a departure from the Court's schedule in the interest of justice" and expressly reserved judgment on whether Bucks County is an adequate representative with typical claims. Sept. 8, 2017 Order, 2017 WL 4174925, at *1, slip op. at *2-3. We initially dismissed Credit Suisse without prejudice, reasoning that "OTC plaintiffs may move to add a named plaintiff that transacted with Credit Suisse." Sept. 29, 2017 Order, slip op. at *1. But in the intervening six months, OTC plaintiffs have not moved to add a named plaintiff that transacted with Credit Suisse. Thus, no named plaintiff has Article III standing to sue Credit Suisse, and any attempt to add such a plaintiff (or a plaintiff who transacted with any panel bank not currently a defendant) at this juncture of the action would be untimely and unduly prejudicial as a matter of law. Cf. Block v. First Blood Assocs., 988 F.2d 344, 350 (2d Cir. 1993) ("In determining what constitutes 'prejudice,' we consider whether the assertion of the new claim would: (i) require the opponent to expend significant additional resources to conduct discovery and prepare for trial; [or] (ii) significantly delay the resolution of the dispute."). We therefore again dismiss Credit Suisse as a defendant, but with prejudice this time.

Settlements between the OTC plaintiffs and certain panel banks have narrowed the scope of claims remaining in this action as well. We have preliminarily approved the OTC plaintiffs' settlements with Barclays and Citi, and OTC plaintiffs have moved for final approval.[163] (Letter from Michael Hausfeld to the Court, Sept. 22, 2017, ECF No. 2277 (Barclays); Letter from Michael Hausfeld to the Court, Dec. 15, 2017, ECF No. 2381 (Citi).) OTC plaintiffs have also settled with Deutsche Bank. (Feb. 27, 2018 Motion, ECF No. 2448.)[164]

Accordingly, OTC plaintiffs' antitrust claims remain only against Bank of America and JPMorgan Chase. The state-law implied covenant and unjust enrichment claims remain against Bank of America, JPMorgan Chase, RBC, and UBS. Having delineated the scope of the claims remaining in this action, we turn to the pending Daubert and class certification motions.

1. Daubert Motion against Dr. Stiglitz

In litigating class certification, the parties offer a significant amount of expert testimony. OTC plaintiffs offer one report from Dr. Joseph Stiglitz dated February 2, 2017 (Decl. of Michael Kelso ex. 1, May 10, 2017, ECF No. 1906) and two reports

[163] We held fairness hearings on both of these settlements, (Oct. 23, 2017 Hr'g Tr., ECF No. 2344 (Barclays); Jan. 23, 2018 Hr'g Tr., ECF No. 2427 (Citi)), and deferred consideration of final approval until our resolution of these class certification motions.

[164] Though no longer a defendant following our personal jurisdiction rulings in LIBOR III and LIBOR VI, HSBC has also settled with the OTC plaintiffs. (Feb. 23, 2018 Motion, ECF No. 2442.)

from Dr. B. Douglas Bernheim: (1) an initial report dated February 2, 2017 (Decl. of Michael Kelso ex. 2, May 10, 2017, ECF No. 1906); and (2) a rebuttal report dated May 9, 2017 (Decl. of Michael Kelso ex. 3, May 10, 2017, ECF No. 1906). We refer to these as the Stiglitz Report, the Bernheim Initial Report, and the Bernheim Rebutal Report, respectively. OTC defendants offer one report from Dr. Robert Willig dated April 3, 2017 (Decl. of Jamie Heine ex. 1, July 1, 2017, ECF No. 2031), and two expert reports from Dr. Janusz Ordover: (1) an initial report dated April 21, 2017 (Decl. of Abram Ellis ex. 1, July 3, 2017, ECF No. 2033); and (2) a sur-rebuttal report dated July 3, 2017 (Decl. of Abram Ellis ex. 2, July 3, 2017, ECF No. 2033). We refer to these as the Willig report, the Ordover Initial Report, and the Ordover Rebuttal Report, respectively. Only one Daubert motion, against Dr. Stiglitz, was filed in this action.

Dr. Stiglitz[165] offers a number of opinions in his report, identifying the "important economic features of the LIBOR process" (Stiglitz Report ¶¶ 13-17); discussing the "importance of LIBOR in financial markets" (Stiglitz Report ¶¶ 18-24); addressing the relationship between "LIBOR and competition in financial markets" (Stiglitz Report ¶¶ 25-43); concluding that "LIBOR submitters have economic incentives to collude" (Stiglitz Report ¶¶ 44-51); and

[165] OTC defendants do not challenge Dr. Stiglitz's qualifications. We agree that he is qualified to offer the opinions presented in his report.

finally opining that "LIBOR contributors' actions were inconsistent with non-collusive independent behavior" (Stiglitz Report ¶¶ 52-59). In addition, Dr. Stiglitz opines that all of his analysis and the evidence on which he relies "are common to all plaintiffs and class members described in Plaintiffs' Compliant [sic]." (Stiglitz Report ¶ 61.) Despite these broad headings, Dr. Stiglitz's opinions defy easy categorization. Accordingly, rather than parse through Dr. Stiglitz's report paragraph by paragraph in order to salvage the admissible portions, cf. In re Pfizer, 819 F.3d at 665, we set forth several principles governing the admissibility of Dr. Stiglitz's opinions.[166]

Dr. Stiglitz offers a number of opinions that collusion in LIBOR resulted in the distortion of capital markets and impeded effective regulatory oversight. (E.g., Stiglitz Report ¶ 28.) Because OTC plaintiffs have not seriously alleged that type of harm and do not claim damages based on this harm, Dr. Stiglitz's opinions to that effect are accordingly irrelevant and inadmissible. See Raskin, 125 F.3d at 66 & n.5. Additionally, Dr. Stiglitz offers several opinions based on alleged collusion in

[166] We also note, as a threshold matter, the limited relevance of Dr. Stiglitz's opinions at the class certification stage. The vast majority of Dr. Stiglitz's opinions consider whether the defendants could have engaged, and did engage, in collusion, with his opinions that the evidence necessary to prove such collusion is common and class-wide seemingly appended as an afterthought. As OTC plaintiffs themselves have reminded us, class certification is not an appropriate time for a full-on inquiry into the merits to the extent they do not overlap with Rule 23. See, e.g., In re IPO, 471 F.3d at 41-42. Nonetheless, because Dr. Stiglitz does opine that evidence of collusion will be common to all class members (e.g., Stiglitz Report ¶ 61), his report maintains some minimal relevance such that its wholesale exclusion is not warranted.

other financial indices, including foreign-currency LIBOR, Euribor, and ISDAFix. (E.g., Stiglitz Report ¶¶ 41-42.) These opinions are likewise irrelevant to the analysis of USD LIBOR, see LIBOR IV, 2015 WL 6243526, at *45, slip op. at *113; cf. Fed. R. Evid. 404(b), and are inadmissible, see Nimely, 414 F.3d at 397. Finally, Dr. Stiglitz may not offer opinions that purport to interpret documents like trader communications, government reports, and orders issued by regulatory authorities. (E.g., Stiglitz Report ¶¶ 52-59.) These opinions are not the product of Dr. Stiglitz's expertise, as the documents he purports to interpret are equally understandable by the trier of fact at this stage, and these opinions are therefore inadmissible.[167] See Jiau, 734 F.3d at 154.

OTC defendants' motion to exclude Dr. Stiglitz's opinion is therefore granted in part and denied in part. Dr. Stiglitz may not offer opinions relating to the distortion of capital markets, those relating to alleged collusion in indices other than USD LIBOR, and those purporting to interpret trader communications, government reports, and similar documents. Additionally, based on OTC plaintiffs' concession that Dr. Stiglitz's opinions are limited and do not extend to "collusion's impact, its direction

[167] This conclusion is consistent with our holdings in the Exchange-based action, where we held that Exchange plaintiffs' experts Dr. Netz and Mr. Beevers may not offer opinions interpreting trader communications and other documents readily understandable by the trier of fact. See supra section III.1.2.1; section III.1.3.2.2.

(suppression or inflation) or its magnitude," (OTC Pls.' Stiglitz Opp'n 11), Dr. Stiglitz may not opine on those subjects. The remainder of Dr. Stiglitz's opinions remain admissible, though their limited evidentiary basis will reduce the weight to which his opinions might otherwise be entitled.

2. Class Certification

Turning to class certification, we first consider issues of standing before addressing the Rule 23(a) requirements and the predominance and superiority requirements of Rule 23(b)(3).

2.1. Standing

Following SEIU's withdrawal, each remaining named plaintiff alleges that it purchased LIBOR-based interest-rate swaps from panel banks; none asserts that it purchased LIBOR-based bonds (including floating-rate notes) from any panel bank. (CTAC ¶¶ 12-16.) OTC defendants contend that the named plaintiffs therefore lack both Article III standing and class standing to assert claims on behalf of bondholders. (OTC Defs.' Class Opp'n 29-30; OTC Defs.' Suppl. Opp'n 5.) They rely heavily on Sonterra Capital Master Fund, Ltd. v. UBS AG, a case alleging manipulation of Yen LIBOR and the Tokyo Interbank Offered Rate, in which Judge Daniels concluded that interest-rate swaps and forward rate agreements (FRAs) were sufficiently different such that plaintiffs transacting only in swaps "could not have suffered any injury traceable to [FRAs] and lack [Article III] standing to bring these

claims." No. 15 Civ. 5844 (GBD), 2017 WL 1091983, at *2 (S.D.N.Y. Mar. 10, 2017).

OTC plaintiffs respond that swaps and bonds are sufficiently similar such that they have both Article III and class standing. (OTC Pls.' Class Reply 28-30.) They rely heavily on Sullivan v. Barclays Plc, a case alleging manipulation of Euribor, in which Judge Castel concluded that interest-rate swaps and forward rate agreements were sufficiently similar such that named plaintiffs transacting only in swaps had standing to represent absent class members transacting in FRAs, because "any harm suffered by a party to an FRA as a result of the Euribor's manipulation would have been caused by the identical misconduct of the identical parties." No. 13 Civ. 2811 (PKC), 2017 WL 685570, at *8 (S.D.N.Y. Feb. 21, 2017).

We are not entirely persuaded by OTC defendants' reliance on Sonterra. The Article III inquiry asks whether plaintiffs have suffered an injury-in-fact traceable to defendants' challenged behavior, not whether they have suffered a specific form of injury-in-fact. Injury suffered on swap purchases as a result of LIBOR suppression is not meaningfully different in the Article III context from injury suffered on bond purchases as a result of LIBOR suppression. Rather, named plaintiffs need only establish some injury from LIBOR manipulation, irrespective of the specific type of financial instrument on which that injury was incurred, to

establish Article III standing; they have done so here. To the extent that differences between types of financial instruments raise "standing" considerations, they raise issues of class standing, not Article III standing.

To establish class standing to represent absent class members, a named plaintiff must "plausibly allege[] (1) that he personally has suffered some actual injury as a result of the putatively illegal conduct of the defendant, and (2) that such conduct implicates the same set of concerns as the conduct alleged to have caused injury to other members of the putative class by the same defendants." RBPA, 775 F.3d at 161 (quoting NECA, 693 F.3d at 162). Consistent with our conclusion as to Article III standing, we first conclude that named plaintiffs have alleged that they have suffered actual injury on swaps purchased from panel banks as a result of defendants' alleged suppression of LIBOR during the class period. Second, we conclude that "such conduct" -- alleged LIBOR suppression during the class period -- is the same conduct that caused injury to absent class members purchasing bonds. Because the conduct in question is the same, NECA's second "same set of concerns" prong is satisfied. Accordingly, even though the named plaintiffs transacted only in swaps with panel banks, they nonetheless have class standing to represent absent class members transacting in bonds.

Despite this conclusion, we note that OTC plaintiffs' reliance on Sullivan is not entirely persuasive here. Interest-rate swaps and forward rate agreements are economically closer in nature than swaps and bonds. Compare LIBOR VI, 2016 WL 7378980, at *19, slip op. at *52 ("An interest rate swap is an instrument in which 'two parties agree to exchange interest rate cash flows, based on a specified notional amount from a fixed rate to a floating rate (or vice-versa) or from one floating rate to another.'"), with Sullivan, 2017 WL 685570, at *7 ("In an FRA, the parties contract for payment at a settlement date, with the amount due based on the difference between an agreed-upon, fixed 'forward rate' and a fluctuating 'market rate' set by the Euribor."). Unlike these "highly negotiated" two-way transactions, bond purchases are "non-negotiated." LIBOR VI, 2016 WL 7378980, at *18, *20, slip op. at *49, *53. But despite these difference in negotiability, we recognized that "[a]t bottom, swapholders are in a position similar to bondholders" with respect to LIBOR suppression, id. at *20, slip op. at *55; these differences therefore do not alter the ultimate outcome of the class standing analysis.

We conclude that differences between swaps and bonds do not, as a general matter, render the swap-only named plaintiffs lacking in class standing to assert claims on behalf of bond purchasers.

2.2. Rule 23(a)

Turning to the Rule 23(a) requirements, OTC defendants do not seriously dispute the requirements of numerosity or commonality.[168] We conclude that these requirements are satisfied: Dr. Bernheim's identification of thousands of swaps transactions into which Citi entered (Bernheim Initial Report ¶ 210), evidence that defendants do not challenge, is sufficient to establish numerosity. See Pa. Pub. Sch. Emps., 772 F.3d at 120.

As to commonality, we find that "the existence of a price-fixing conspiracy [is] susceptible to common proof" in this action. Cordes & Co., 502 F.3d at 105. The Second Circuit has held that a conspiracy to suppress LIBOR is in fact a horizontal price-fixing conspiracy, see Gelboim, 823 F.3d at 771, and we conclude that proof of the existence of the conspiracy will not differ from class member to class member. Each class member stands in the same position as to the conspiracy: receiving payments at an interest rate based on LIBOR. Though the actual impact that the conspiracy may have had may differ between class members, that variation does not render individual in nature the question of whether a conspiracy existed in the first instance. We conclude that the question of whether a conspiracy to suppress LIBOR existed

[168] OTC defendants also do not contest the issue of ascertainability. Ascertainability "requires only that a class be defined using objective criteria that establish a membership with definite boundaries." In re Petrobras, 862 F.3d at 264. By setting forth specific transactions into which putative class members must have entered, the class definition satisfies this requirement.

is a common one, thereby satisfying Rule 23(a)(2)'s commonality requirement.

2.2.1. Typicality

OTC plaintiffs assert that their claims are typical of the class's claims, as all of the claims in question arise from the alleged suppression of LIBOR during the class period. (OTC Pls.' Class Mem. 16-17; OTC Pls.' Class Reply 28.) OTC defendants challenge specifically the typicality of Bucks County's claims based on a 2012 termination agreement between Bucks County and RBC, the panel bank with which Bucks County had transacted. (OTC Defs.' Suppl. Opp'n 2-5.) OTC defendants also challenge generally the typicality of the named plaintiffs' claims, contending that each named plaintiff is subject to the defense that it was not actually injured. (OTC Defs.' Class Opp'n 28.)

2.2.1.1. Bucks County

OTC defendants contend that Bucks County is subject to a unique defense: in terminating its swap with RBC, Bucks County released the claims it now asserts. (OTC Defs.' Suppl. Opp'n 2-5.)

The swap between Bucks County and RBC, initiated in April 2005 and intended to run through June 2019, was supported by several underlying documents: an ISDA Master Agreement between RBC and Bucks County setting forth more general provisions, an accompanying "Schedule" setting forth certain of the swap's

specific attributes, (Decl. of Brian Poronsky ex. B, Nov. 3, 2017, ECF No. 2340 ("Poronsky Bucks County Decl.")), and an additional confirmation setting forth further terms of the swap (Poronsky Bucks County Decl. ex. C.).

The swap was terminated in 2012, as reflected in a termination agreement between RBC and Bucks County. The Termination Agreement defined the "Transaction" to be "a transaction on 14 Apr 2005" with certain enumerated attributes,[169] and further provided that "[t]he Agreement shall remain in full force and effect and the parties agree that any existing and subsequent interest rate swap and currency exchange transactions together with confirmations exchanged between the parties confirming such transactions shall be governed by and form part of the Agreement." (Poronsky Bucks County Decl. ex. D.) Among other provisions, the Termination Agreement then provided that "[t]he Transaction shall be terminated and cancelled as of 14 Feb 2012 . . . and all rights, duties, claims and obligations of each of [RBC] and [Bucks County] thereunder shall be released and discharged on that date." (Poronsky Bucks County Decl. ex. D.)

OTC plaintiffs assert that the release does not extend to Bucks County's claims. Specifically as to the implied-covenant

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[169] The whereas clause in question recited, in full: "AND WHEREAS [RBC] and [Bucks County] entered into a transaction on 14 Apr 2005 (the 'Transaction') effective 18 Apr 2005 having a Notional Amount of USD 63,120,000.00 and a Termination date of 01 Jun 2019 such Transaction being evidenced by a Confirmation (as described in the Agreement) dated as of 14 Apr 2005." (Poronsky Bucks County Decl. ex. D.)

claim, OTC plaintiffs contend that despite the language of the termination agreement, Bucks County's claim is not released because the "Transaction" is defined separately from the ISDA Master Agreement. Under this theory, termination of the swap could not have affected Bucks County's claim arising from the ISDA Master Agreement, which remained in effect following the termination. (OTC Pls.' Suppl. Reply 3.)

This attempt to divorce the Transaction from the ISDA Master Agreement is unavailing. While OTC plaintiffs correctly assert that the ISDA Master Agreement "shall remain in full force and effect" under the Termination Agreement, this statement refers only to "any existing and subsequent interest rate swap and currency exchange transactions together with the confirmations exchanged between the parties confirming such transactions." (Poronsky Bucks County Decl. ex. D.) The ISDA Master Agreement and the confirmation documents supporting a transaction "form a single agreement between the parties" (Poronsky Bucks County Decl. ex. B ¶ 1(c)), a principle confirmed by the Termination Agreement's reference to the ISDA Master Agreement "together with confirmations exchanged between the parties," (Poronsky Bucks County Decl. ex. D 2). OTC plaintiffs' contention that their claim for breach of the implied covenant arises only out of the ISDA Master Agreement and not the contractual documents supporting the swap itself is unavailing, as nothing in the ISDA Master Agreement

standing alone incorporates LIBOR or obligates RBC to pay interest to Bucks County at a rate determined with reference to LIBOR.

Further, the Termination Agreement refers to the "Transaction" and the parties' "rights, duties, claims and obligations . . . thereunder." (Poronsky Bucks County Decl. ex. D.) The "Transaction" is "evidenced by a Confirmation (as described in the [ISDA Master] Agreement)," but the Termination Agreement does not restrict the "Transaction" to refer only to the ISDA Master Agreement or the accompanying confirmations. Accordingly, "thereunder" refers to the "Transaction" itself and not merely the documents supporting and memorializing the "Transaction." Absent the swap -- the "Transaction" in question as defined in the Termination Agreement -- Bucks County would have no implied covenant claim against RBC at all. We conclude that Bucks County's implied covenant claim was released under the Termination Agreement.

As to unjust enrichment, OTC plaintiffs argue that their unjust enrichment claims are not asserted under any contract and therefore could not have been released under the Termination Agreement. OTC plaintiffs correctly recite our holdings in LIBOR II and LIBOR III, in which we determined that OTC plaintiffs' "unjust enrichment claims against counterparty banks are not barred by the existence of the contracts." LIBOR III, 27 F. Supp. 3d at 483-84, slip op. at *72. We reasoned that "[a]lthough the

swap contracts clearly required defendants to pay plaintiffs the prescribed floating rate of return using the LIBOR reported by the BBA, the contracts did not clearly cover the subject matter now at issue, namely whether defendants were permitted to manipulate LIBOR itself and thereby depress the amount they were required to pay plaintiffs." LIBOR III, 27 F. Supp. 3d at 483, slip op. at *72 (alterations incorporated and internal quotation marks omitted) (quoting LIBOR II, 962 F. Supp. 2d at 630, slip op. at *50-51).

We are nonetheless unpersuaded that the extracontractual nature of an unjust enrichment claim implies that it was not released by the Termination Agreement. As we explained above in the implied covenant context, the Termination Agreement releases all claims arising under the "Transaction," which is defined to be the swap and includes more than simply the ISDA Master Agreement and accompanying confirmations. The operative question is not whether the unjust enrichment claim arises under the ISDA Master Agreement; it is whether it arises under the swap. We conclude that it does.[170]

[170] Additionally, OTC plaintiffs' argument here runs directly counter to their suggestion that their unjust-enrichment claims are subject to the choice-of-law provisions in the ISDA Master Agreement. Presumably, to the extent an extracontractual unjust enrichment claim is controlled by a contract's choice-of-law provision, it is similarly controlled by a release extinguishing claims arising under the same contract.

In sum, we conclude that the release contained in the Termination Agreement extends to both Bucks County's implied covenant claim and its unjust enrichment claim.[171] While "a representative may satisfy the typicality requirement even though that party may later be barred from recovery by a defense particular to him [or her] that would not impact other class members," Lapin, 254 F.R.D. at 179 (alteration in original) (quoting In re Frontier Ins. Grp., Inc. Sec. Litig., 172 F.R.D. 31, 41 (E.D.N.Y. 1997)), applying this principle here would be inappropriate. We allowed OTC plaintiffs to belatedly substitute Bucks County as a named plaintiff following the withdrawal of SEIU, see Sept. 8, 2017 Order, 2017 WL 4174925, and Bucks County is the only plaintiff that transacted with RBC. Because Bucks County's presence is the only reason RBC remains as a defendant in this litigation, the unique defense that Bucks County released its claims nonetheless "threaten[s] to become the focus of the litigation" at this juncture. Baffa, 222 F.3d at 59.

Accordingly, we find that Bucks County's claims are not typical of the class's claims because it is subject to a unique defense: that it previously released its claims.[172] Because Bucks

[171] Again, we need not have so concluded in order to find that Bucks County's claims are not typical of the class's claims. See, e.g., In re Digital Music, 321 F.R.D. at 97-98 ("[T]he defendant need not show at the certification stage that [a] unique defense will prevail." (second alteration in original) (quoting Lapin, 254 F.R.D. at 179)).

[172] Additionally, the Schedule to the ISDA Master Agreement provides that the parties submit to the "exclusive jurisdiction of the Courts of the

County is the only named plaintiff with standing to assert claims against RBC, no class will be certified against RBC even if the remaining Rule 23 requirements are met.

2.2.1.2. Lack of Injury

As to net injury, OTC defendants assert that each class representative is "subject to the unique defense that it suffered no injury," citing the "individualized, economically complex analysis required to evaluate injury." (OTC Defs.' Class Opp'n 28.) OTC Plaintiffs reply that because "netting and absorption apply to" all class members "and can be addressed with the same common formula," the defense is not "unique" and does not defeat typicality. (OTC Pls.' Class Reply 28.)

We find that, in this context, the named plaintiffs' purported lack of injury (unlike the release contained in the Bucks County termination agreement) is not a unique defense precluding a finding of typicality. See 1 William B. Rubenstein, Newberg on Class Actions § 3:45 (5th ed.) (Westlaw 2017) ("Courts generally find typicality lacking if the proposed class representative's claims are subject to a procedural bar such as res judicata or if the claims arose before the law on which the class claims are based came into effect."). Indeed, this argument is difficult to

Commonwealth of Pennsylvania and the United States District Court located in the Eastern District of Pennsylvania" as to "any suit, action or proceedings relating to this Agreement." (Poronsky Bucks County Decl. ex. B at 29.) This forum-selection clause would also appear to present an additional unique defense.

reconcile with OTC defendants' broader argument that many of the named plaintiffs and a substantial portion of absent class members were not injured. Accepting those arguments, the lack of injury would hardly be a "unique" defense.

"[A] purported representative who lacks standing is not a member of the putative class and thus cannot satisfy the typicality or adequate representation requirements," 1 McLaughlin on Class Actions § 4:18 (14th ed.) (Westlaw 2017) (emphasis added), but the named plaintiffs here do have standing. A lack of net injury does not compel a finding that the named plaintiff has failed to allege sufficient injury-in-fact for Article III standing purposes. See Denney, 443 F.3d at 264.

Rather, this typicality argument is largely a repackaging of the damages arguments that OTC defendants offer in the predominance context. Variation in the amount of damages by itself, of course, is not sufficient to defeat typicality. See 1 William B. Rubenstein, Newberg on Class Actions § 3:43 (5th ed.) (Westlaw 2017) ("Courts routinely find that the proposed class representative's claims are typical even if the amount of damages sought differ from those of the class or if there are differences among class members in the amount of damages each is claiming."); 1 McLaughlin on Class Actions § 4:19 (14th ed.) (Westlaw 2017) ("[T]he fact that damages will need to be calculated on an

individual basis does not defeat typicality or otherwise bar class certification.”).

2.2.1.3. Conclusion

We accordingly find that the named plaintiffs’ claims -- with the exception of Bucks County’s -- are typical of the class’s claims and that Rule 23(a)(3)’s typicality requirement is satisfied. However, Bucks County’s claims are not typical, and because Bucks County is the only named plaintiff that transacted with RBC, no class will be certified against RBC. Furthermore, OTC plaintiffs have never filed a complaint that includes Bucks County as a named plaintiff,[173] and doing so has been rendered unnecessary by our conclusions here as to the typicality of Bucks County’s claims. RBC is dismissed, with prejudice, as a defendant in this action.

2.2.2. Adequacy of Representation

Turning finally to adequacy of representation, OTC defendants contend that named plaintiffs are not adequate representatives because several of them “likely benefited from any persistent suppression” and because absorption of any LIBOR suppression into swap and bond transactions creates conflicting incentives to establish suppression based on the timing of class members’ transactions. (OTC Defs.’ Class Opp’n 28-29.) OTC plaintiffs

[173] RBC also correctly points out that it has never had an opportunity to assert its defenses against Bucks County. (Letter from Brian Poronsky to the Court, Jan. 12, 2018, ECF No. 2402.)

respond that netting and absorption do not create significant conflicts because the Court will set, as a matter of law, the scope of any netting required and because any netting requirement can be implemented formulaically. (OTC Pls.' Class Reply 28.)

We find, as OTC defendants argue, that when the effects of absorption are taken into account, the damages attributable to different class members will be maximized by different amounts of suppression over time. That is, each class member has incentive to establish lower amounts of suppression at the time it entered into a swap and greater suppression thereafter, thereby minimizing the extent to which absorption will reduce its damages. To be sure, these incentives do create the potential for some conflict. However, we considered substantially similar arguments in the Exchange-based action and concluded as to the <u>suppression-based</u> class that conflicts created by differing incentives to establish the extent of suppression were not sufficiently fundamental so as to preclude a finding of adequacy. <u>See</u> <u>supra</u> section III.4.3.2. Unlike the <u>trader-based</u> class in the Exchange action, any diverging incentives within the putative OTC class (and within the proposed suppression class in the Exchange-based action) are necessarily limited by <u>suppression</u>'s one-directional nature. Further, absorption is limited to swaps initiated during the suppression period. Accordingly, we again conclude that these conflicts, constrained as such, do not rise to the level of "fundamental"

conflicts defeating adequacy. See In re Payment Card Interchange Fee, 827 F.3d at 231.

2.3. Predominance

In assessing predominance, we again begin with the elements of the OTC plaintiffs' claims. Because the issues raised by OTC plaintiffs' (federal) antitrust claims differ substantially from those raised by the state-law implied covenant and unjust enrichment claims, we analyze them separately.

2.3.1. Antitrust

An antitrust claim has three elements: "(1) a violation of antitrust law; (2) injury and causation; and (3) damages." In re Visa Check, 280 F.3d at 136. The second element has also been termed "antitrust injury" and "causation or impact." See Cordes & Co., 502 F.3d at 105. We analyze each, though we go out of order and consider damages before injury.

2.3.1.1. Violation of Antitrust Law

As we have concluded, and as defendants do not substantially dispute, the existence of a conspiracy is a common question. See id. ("[Plaintiffs'] allegations of the existence of a price-fixing conspiracy are susceptible to common proof and, if proven true, would satisfy the first element of the plaintiffs' antitrust cause of action."); see also In re Visa Check, 280 F.3d at 136. Proof of a conspiracy to suppress LIBOR will be essentially the same for

all class members, even if the conspiracy has ultimately differing impacts on different class members.

2.3.1.2. Damages

As we have consistently held, damages is an individualized question to some extent in every case, as the evidence needed to prove damages necessarily "varies from member to member." Tyson Foods, 136 S. Ct. at 1045 (quoting 2 William B. Rubenstein, Newberg on Class Actions § 4:50 (5th ed. 2012)). Even when a common methodology or calculation may be applied, the evidence to which the methodology is applied or the calculation is based will generally vary from class member to class member. (Ordover Report ¶¶ 126-49.) Even assuming panel banks retained centralized records as to the swaps into which it entered (e.g., Bernheim Initial Report ¶ 210), the calculation of damages as to bonds will likely require individual records given their more actively traded nature; a class member cannot recover damages for reduced LIBOR-based interest payments if it had previously sold the underlying bond entitling the class member to those payments in the first place.

In addition to the individual question of exactly which LIBOR-based instruments a class member purchased from which panel bank, OTC defendants identify two additional individual issues: netting and absorption. By absorption, we mean specifically the principle we set forth in LIBOR VI that because parties "entering into a

swap transaction . . . take into consideration the present level of LIBOR and their view of how LIBOR will change in the future," "the negotiated components [of a swap] absorbed the effects of LIBOR suppression" to some extent. LIBOR VI, 2016 WL 7378980, at *20, slip op. at *53.

We agree that any netting requirements will add individual issues. As we have explained, "a plaintiff both injured and enriched by illegal activity cannot choose to recover for his injuries yet retain his windfall" where "both result from a single wrong." Minpeco, 676 F. Supp. at 488 (emphasis omitted) (citing Abrahamson, 568 F.2d at 878). We will require some degree of netting in order to calculate damages, and determining exactly what other LIBOR-based instruments a class member held will entail individual inquiry. For example, a class member that purchased a LIBOR-based swap from a panel bank, with the express purpose of eliminating all or part of its LIBOR exposure from other LIBOR-based financial instruments -- for example, its issuance of a LIBOR-based floating-rate note (Ordover Report ¶ 125 & tbl.27) -- would receive an unwarranted windfall if the LIBOR-based note were not considered. The determination of what instruments should be incorporated into the netting analysis will require extensive evidence that is specific to a given class member.

We also conclude that absorption, at least for swaps initiated during the suppression period, cannot be measured on a classwide

basis given the negotiated nature of swaps. We acknowledge that plaintiffs' expert Dr. Bernheim and defendants' expert Dr. Ordover disagree on the issue. We find Dr. Ordover's opinions more compelling, given the variation in the fixed-rate components of swaps observed in the market -- including among swaps entered into by the named plaintiffs. (Ordover Initial Report ¶¶ 50-70.) We do not find that Dr. Bernheim's opinions fully support the proposition that the impact of absorption can be calculated formulaically for all class members with no class member-specific evidence required (Ordover Rebuttal Report ¶¶ 9-13), and Dr. Bernheim concludes only that the effects of absorption "should be similar across market participants," (Bernheim Rebuttal Report ¶ 296 (emphasis added)). Accordingly, we find that for swaps initiated during the suppression period, determining the fixed-rate component of the swap will require individual evidence. Our finding here comports with our earlier observation that "there is every expectation that the negotiated component compensated for manipulated LIBOR." LIBOR VI, 2016 WL 7378980, at *20, slip op. at *54; cf. Gelboim, 823 F.3d at 780 ("The disputed transactions were done at rates that were negotiated.").

In sum, even to the extent that panel banks maintain centralized records of the swaps they issued, damages present an individual question that will require class member-specific evidence to analyze.

2.3.1.3. Antitrust Injury

"[T]he second element of an antitrust cause of action -- 'antitrust injury' -- poses two distinct questions. One is the familiar factual question whether the plaintiff has indeed suffered harm, or 'injury-in-fact.' The other is the legal question whether any such injury is 'injury of the type the antitrust laws were intended to prevent and that flows from that which makes defendants' acts unlawful.'" Cordes & Co., 502 F.3d at 106 (quoting Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc., 429 U.S. 477, 489 (1977)). The Second Circuit has already answered the second question in the affirmative as to all class members. See Gelboim, 823 F.3d at 772-75. We accordingly focus on the first.

In disputing whether antitrust injury is susceptible to common proof, the parties dispute the proper definition of "injury" and the relationship between "injury" and "damages." OTC plaintiffs contend that "the law is clear that receiving at least one suppressed payment shows antitrust impact or injury from the conspiracy." (OTC Pls.' Class Reply 12.) They base this contention primarily on In re Nexium Antitrust Litigation, in which the First Circuit held that "antitrust injury occurs the moment the purchaser incurs an overcharge, whether or not that injury is later offset" and that "if a class member is overcharged, there is

an injury, even if that class member suffers no damages." 777 F.3d 9, 27 (1st Cir. 2015).

OTC defendants respond that determining injury entails "a complex analysis of the net impact of the alleged LIBOR suppression on each class member's LIBOR-linked portfolio" (OTC Defs.' Class Opp'n 12 (emphasis added).) -- that is, injury should be defined as having suffered damages greater than zero. They base this argument on our dismissal of Highlander Realty as a plaintiff for having failed to plead standing, LIBOR V, 2015 WL 6696407, at *22-24, slip op. at *61-63, and our reasoning that "the effect of a change in LIBOR cannot be isolated in the same way as the overcharge of a typical price-fixed product such as a book," LIBOR VI, 2016 WL 7378980, at *18, slip op. at *49-50.

The Second Circuit has held that antitrust injury and damages are related, but nonetheless distinct, concepts. As the Circuit has explained, "the injury-in-fact question" considers "whether a plaintiff was harmed," and "the damages question" considers "by how much a plaintiff was harmed." Cordes & Co., 502 F.3d at 107 n.11; see also In re Visa Check/MasterMoney Antitrust Litig., 192 F.R.D. 68, 82 (E.D.N.Y. 2000) ("The fact of injury, which is required as an element of the plaintiff's claim, should not be confused with the extent of injury (as reflected by the amount of damages)."), aff'd, 280 F.3d 124. Antitrust plaintiffs at class certification need not "demonstrate through common evidence the

precise amount of damages incurred by each class member," but are expected to provide "common evidence to show all class members suffered some injury." Sykes, 780 F.3d at 82 (emphasis added) (quoting In re Rail Freight Fuel Surcharge Antitrust Litig., 725 F.3d 244, 252 (D.C. Cir. 2013)).

Both parties also rely on the Second Circuit's decision in Denney. The OTC defendants rely on Denney's statement that a class "must . . . be defined in such a way that anyone within it would have standing," 443 F.3d at 264, while OTC plaintiffs rely on its holding that "the fact that an injury may be outweighed by other benefits, while often sufficient to defeat a claim for damages, does not negate standing," id. at 265, which suggests that injury is distinct from net injury.

We are ultimately persuaded by neither interpretation of Denney. As to OTC defendants' interpretation, Denney's holding that a class must be defined to include only "injured" members refers to "injury" in the Article III context and not the antitrust context, and as we have pointed out, Denney sets a low bar for what injury-in-fact is required to establish Article III standing in the class-action context;[174] one underpayment as a result of

[174] Accordingly, we would reject any suggestion that the proposed class presents Article III standing issues by encompassing class members that were, on net, not injured by LIBOR suppression.

LIBOR suppression is sufficient.[175] We are accordingly skeptical that Denney's Article III holding extends to the antitrust context.

But this same skepticism leads us to conclude that Denney's relaxed definition of "injury" does not bolster In re Nexium, which in effect defines (antitrust) "injury" in a way comparable to how Denney's defines (Article III) injury. Rather, Denney's statement that "an injury-in-fact need not be capable of sustaining a valid cause of action," 443 F.3d at 264, suggests that its interpretation of "injury" is specific to the Article III context and should not be generalized to every cause of action that requires "injury" as an element.

While these authorities guide our analysis, they do not squarely address the critical question: whether "injury" in the antitrust context may be established through a single overcharge or whether "injury" includes some conception of netting. We accordingly consider whether to apply In re Nexium's holding that

[175] We previously dismissed named plaintiff Highlander Realty for lack of standing. LIBOR V, 2015 WL 6696407, at *22-24, slip op. at *61-63. At the time of that decision, no antitrust claims remained pending against any defendant as a result of our decision in LIBOR I; our dismissal of Highlander "for lack of standing" necessarily refers to Highlander's Article III standing. Accordingly, OTC plaintiffs' suggestion that we "did not rule that Highlander lacked Article III standing or even address the issue," (OTC Pls.' Class Reply 15-16), is incorrect. OTC plaintiffs further suggest that this holding is "directly contrary to Denney's holding that an injury offset does not negate standing" (OTC Pls.' Class Reply 16), but this suggestion ignores the fact that Highlander never pleaded any injury at all: it alleged at the outset that it engaged in a single transaction under which it not only borrowed money from a panel bank affiliate (such that it paid interest at a LIBOR-based rate) but also eliminated any exposure to LIBOR through an interest-rate swap. (Highlander Compl. ¶¶ 6-7, No. 13 Civ. 2343, ECF No. 1.) Because Highlander failed to plead any exposure to LIBOR, it failed to plead any injury that could have been caused by LIBOR manipulation.

an "antitrust injury occurs the moment the purchaser incurs an overcharge, whether or not that injury is later offset," 777 F.3d at 27, on its merits.

First and foremost, reduced payments on LIBOR-based instruments remain different from a series of purchases like the pharmaceuticals at issue in In re Nexium. Because LIBOR serves as a benchmark rate, a single pricing decision -- the setting of LIBOR on a given day -- necessarily diffuses to numerous instruments and impacts each of those instruments. By contrast, in a more conventional antitrust case, an inflated price impacts immediately only the sales occurring at that price (or at prices based on that price); subsequent offsetting undercharges on subsequent purchases result from transactions occurring at a subsequently set price. That temporal component is absent here.

Second, as we observed in LIBOR VI, both bonds and swaps are subject to second-order effects that influence how LIBOR suppression impacts each class member. "[I]f LIBOR was suppressed at the time the bondholder purchased the bond, then both the expected future interest payments and the purchase price of the bond would have reflected that lower LIBOR level." LIBOR VI, 2016 WL 7378980, at *19, slip op. at *50; see also Schwab, 2018 WL 1022541, at *15 ("[A] depressed LIBOR that caused expectations of future interest payments to decrease might result in lock-step reductions in the price of floating-rate instruments.").

Similarly, "in entering into a swap transaction the parties take into consideration the present level of LIBOR and their view of how LIBOR will change in the future." LIBOR VI, 2016 WL 7378980, at *20, slip op. at *53. While we cannot conclude from these effects that LIBOR suppression "could not have caused any losses" whatsoever, Schwab, 2018 WL 1022541, at *15 (emphasis added), they render this case meaningfully different from the prescription drug purchases considered in In re Nexium.

We also question the legal underpinnings of In re Nexium's holding in question. In re Nexium cited two Supreme Court cases, Hawaii v. Standard Oil Co. of Cal., 405 U.S. 251, 262 (1972), and Adams v. Mills, 286 U.S. 397, 407 (1932), see In re Nexium, 777 F.3d at 27, but we do not find In re Nexium's analysis of either case to be persuasive. Standard Oil considered whether antitrust injury suffered by the state of Hawaii as a consumer was properly offset by subsequent recoupment, reasoning that "damages are established by the amount of the overcharge" and that "courts will not go beyond the fact of this injury to determine whether the victim of the overcharge has partially recouped its loss in some other way, even though a State, for example, may ultimately recoup some part of the overcharge through increased taxes paid by the seller." 405 U.S. at 262 n.14 (emphasis added). We are skeptical that Standard Oil's exclusion of recoupment attributable to a distant second-order effect should extend to "later savings

attributable to the same or related transaction," as the First Circuit reasoned, 777 F.3d at 27.

Adams v. Mills, which considered damages under the Interstate Commerce Act incurred by livestock traders forced to pay extra unloading charges to a railyard operator, see 286 U.S. at 405-06, is even further afield. There, the Supreme Court held that the third-party livestock shippers' reimbursement of the damaged traders was irrelevant to the defendant railyard operator's liability, reasoning that "the fact of subsequent reimbursement by the plaintiffs from funds of the shippers" was of no "concern to the wrongdoers." Id. at 407. Nothing in this holding suggests that it is translatable to the antitrust context or, for that matter, any claim involving a series of payments between the same parties rather than a third party.

In sum, we are skeptical of In re Nexium's holding that a single impacted payment is sufficient to establish antitrust injury, both as a general matter and as specifically applied to this action. Nonetheless, we need not squarely decide its applicability, as we conclude that the definition of injury does not ultimately alter the predominance balance.

On the one hand, accepting OTC plaintiffs' definition of injury, we conclude that they have established that the question of whether each class member has experienced injury as a result of the alleged 16-bank conspiracy is a common one. To show injury,

OTC plaintiffs will need to offer classwide evidence that actual published LIBOR was suppressed (i.e., below but-for LIBOR). Regardless of whether this evidence consists of regressions that are capable of estimating but-for LIBOR over the class period in a few calculations (like those offered by Dr. Bernheim), or something more complex as Dr. Willig suggests is necessary, this evidence will nonetheless be classwide. OTC defendants' point that proof of the extent of suppression will differ across panel banks, tenors of LIBOR, and days is again well-taken, but these differences do not create individual questions because each putative class member is ultimately affected through published LIBOR.

On the other hand, if we accepted OTC defendants' definition, the element of "injury" would be an individual question, just as damages is an individual question, but it would be one that adds little to that side of the predominance balance. As counsel for the OTC defendants expressed at oral argument, "all that damages is in an antitrust case is the quantum of injury, not the fact of injury." (Hr'g Tr. 44:12-14.) Under OTC defendants' definition of injury, an assessment of whether a class member has been injured becomes an assessment of what amount of damages the class member has suffered and whether that amount of damages is greater than zero. The considerations that underlie this determination of "injury," including issues of absorption and netting, are

otherwise identical to the determination of damages. Because any class member-specific question of fact relating to injury will be reducible to corresponding questions of fact relating to damages, and because those corresponding questions of fact are already taken into account as weighing against predominance in this action, those injury questions are of little marginal weight on the individual question side of the scale and do not tip the balance. That is, injury (as defined by OTC defendants) and damages would involve the same underlying (individual) questions of fact, and those same questions of fact should not be double-counted in the predominance inquiry simply because they bear on two closely related legal elements.

2.3.1.4. Conclusion

In sum, we conclude that common questions predominate as to OTC plaintiffs' antitrust claims. The only individual questions that OTC defendants have identified relate to damages -- or injury in a manner that essentially overlaps with damages, and "individualized damages determinations alone cannot preclude certification under Rule 23(b)(3)." Roach, 778 F.3d at 409.

2.3.2. State Law Claims

Because OTC plaintiffs' implied covenant and unjust enrichment claims are asserted under state law, we first conduct a choice-of-law analysis to determine "whether different state laws will apply to different members of the class," applying New

York conflict-of-law principles. Nextel, 780 F.3d at 140. If certifying the proposed class would require the application of the laws of different jurisdictions, we consider whether variations in state law introduce individual questions and how those individual questions factor into the predominance analysis.

2.3.2.1. Implied Covenant of Good Faith and Fair Dealing

Under New York law, the "'center of gravity' or 'grouping of contacts' [is] the appropriate analytical approach to choice of law questions in contract cases." Zurich Ins. Co. v. Shearson Lehman Hutton, Inc., 84 N.Y.2d 309, 317 (1994). "[I]n addition to the traditionally determinative choice of law factor of the place of contracting," four other factors are considered "in establishing this 'most significant relationship': the places of negotiation and performance; the location of the subject matter; and the domicile or place of business of the contracting parties." Id. (citing Restatement (Second) of Conflict of Laws § 188(1)). However, when a contract contains a choice-of-law provision, that provision "may reasonably be read as . . . a substitute for the conflict-of-laws analysis that otherwise would determine what law to apply to disputes arising out of the contractual relationship." Ministers & Missionaries Benefit Bd. v. Snow, 26 N.Y.3d 466, 470 (2015) (quoting Mastrobuono v. Shearson Lehman Hutton, Inc., 514 U.S. 52, 59 (1995)). Indeed, "as a general rule, choice of law provisions are valid and enforceable in New York." Terwilliger v.

Terwilliger, 206 F.3d 240, 245 (2d Cir. 2000) (alterations incorporated) (quoting Marine Midland Bank, N.A. v. United Mo. Bank, N.A., 223 A.D.2d 119, 123 (1st Dep't 1996)).

Accordingly, for OTC plaintiffs' claims of breach of the implied covenant of good faith and fair dealing, each class member's claim will be governed by a contractual choice-of-law provision to the extent one exists.[176] See, e.g., ARS Kabirwala, LP v. El Paso Kabirwala Cayman Co., No. 16 Civ. 6430 (GHW), 2017 WL 3396422, at *3 (S.D.N.Y. Aug. 8, 2017) ("Choice-of-law provisions that govern a contract also govern related claims for breach of the implied covenant of good faith and fair dealing."); Comprehensive Habilitation Servs., Inc. v. Commerce Funding Corp., No. 05 Civ. 9640 (PKL), 2009 WL 935665, at *10 n.14 (S.D.N.Y. Apr.

[176] OTC defendants correctly note that "New York law allows a court to disregard the parties' choice when the most significant contacts with the matter in dispute are in another state." Cap Gemini Ernst & Young, U.S., L.L.C. v. Nackel, 346 F.3d 360, 365 (2d Cir. 2003) (per curiam) (internal quotation marks omitted) (quoting Cargill, Inc. v. Charles Kowsky Res., Inc., 949 F.2d 51, 55 (2d Cir. 1991)); see also Hartford Fire Ins. Co. v. Orient Overseas Containers Lines (UK) Ltd., 230 F.3d 549, 556 (2d Cir. 2000) ("Absent fraud or violation of public policy, a court is to apply the law selected in the contract as long as the state selected has sufficient contacts with the transaction." (emphasis added)). This inquiry closely resembles the center-of-gravity analysis conducted in the absence of a choice-of-law provision, with "[f]actors potentially relevant to the existence of sufficient contacts include '(1) the place of contracting; (2) the place of contract negotiation; (3) the place of performance; (4) the location of the subject matter of the contract; and (5) the domicile[s] of the contracting parties.'" McPhee v. Gen. Elec. Int'l, Inc., 736 F. Supp. 2d 676, 680 (S.D.N.Y. 2010) (quoting Sabella v. Scantek Med., Inc., No. 08 Civ. 453 (CM), 2009 WL 3233703, at *12 (S.D.N.Y. Sept. 25, 2009)), aff'd, 426 F. App'x 33 (2d Cir. 2011). However, in light of the New York Court of Appeals's admonition that "New York courts should not engage in any conflicts analysis where the parties include a choice-of-law provision in their contract," Ministers & Missionaries, 26 N.Y.3d at 474, we question whether we should continue to analyze sufficient contacts and will decline to set aside an otherwise valid choice-of-law provision based on a lack of sufficient contacts.

7, 2009) ("[B]reach of the implied covenant of good faith and fair dealing is a contractual cause of action, and the choice of law provision applies to the interpretation and enforcement of the contract."). In the absence of a governing choice-of-law provision, however, a class member's implied covenant claim will be governed by the law determined under the center of gravity analysis set forth by the New York Court of Appeals. See Zurich Ins., 84 N.Y.2d at 317.

OTC plaintiffs contend that the ISDA Master Agreements[177] underlying the swap transactions at issue contain a choice-of-law provision designating either New York law or English law, thereby obviating any class member-specific inquiry into governing law and limiting variation in the substantive law to be applied. (OTC Pls.' Class Reply 24-25.)

This argument misreads the standardized ISDA Master Agreement, which includes a choice-of-law provision that reads in full: "Governing Law. This Agreement will be governed by and construed in accordance with the law specified in the Schedule."

[177] The ISDA Master Agreement is a contract template published by the International Swaps and Derivatives Association, which, once adopted by the parties to a given transaction, "governs the legal and credit relationship between the parties and other aspects of the agreement." Aon Fin. Prods., Inc. v. Societe Generale, 476 F.3d 90, 93 n.4 (2d Cir. 2007). "Supplemental documents, such as confirmations, set forth economic terms and other transaction-specific modifications to the Master Agreement and other standard documents." Id. The ISDA Master Agreement "serves as the contractual foundation for more than 90% of derivatives transactions globally." Lehman Bros. Special Fin. Inc. v. Bank of Am. Nat'l Ass'n (In re Lehman Bros. Holdings Inc.), 553 B.R. 476, 484 n.21 (Bankr. S.D.N.Y. 2016).

(E.g., Porosnky Bucks County Decl. ex. B at 13.) Rather than designating either New York law or English law as OTC plaintiffs suggest, the ISDA Master Agreement designates governing law only with reference to a separate transaction-specific "Schedule."[178] Consideration of each individual schedule is therefore necessary.

The next provision in the ISDA Master Agreement does reference New York law and English law, but is itself not a choice-of-law provision. Titled "Jurisdiction," the provision states that each party "submits to the jurisdiction of the English courts, if this Agreement is expressed to be governed by English law, or to the non-exclusive jurisdiction of the courts of the State of New York and the United States District Court located in the Borough of Manhattan in New York City, if this Agreement is expressed to be governed by the laws of the State of New York." (E.g., Poronsky Bucks County Decl. ex. B. at 13 (emphasis added).) This provision suggests that many parties will in fact designate English law or New York law as controlling, but it is not itself a choice-of-law provision.

[178] Aon Financial Products, 476 F.3d 90, and In re Lehman, 553 B.R. 476, each reference the ISDA Master Agreement, but do not discuss the ISDA Master Agreement's treatment of choice-of-law issues. Similarly, while ISDA's amicus brief in Aon states that "[i]n choosing New York law to govern their CDSs, market participants reasonably expect that courts in this jurisdiction will effectuate their contractual intent as expressed within the four corners of each CDS," Brief 11-12, Aon, No. 06-1080-cv, 2006 WL 1517230 (May 8, 2006), this statement describes only the expectations of market participants who in fact select New York law and indicates little about the frequency with which market participants do so.

In short, we find that the ISDA Master Agreement does not mandate that all, or even most, of the contracts underlying swaps will be analyzed under New York law. Rather, choice-of-law would appear to raise an individual question, in that the governing law will vary from class member to class member based on the law designated in the transaction-specific schedules attached to the each ISDA Master Agreement.

After oral argument, at which we identified OTC plaintiffs' failure to properly interpret the ISDA Master Agreement (Hr'g Tr. 47:23-48:10), OTC plaintiffs submitted supplemental materials supporting the contention that the ISDA Master Agreements controlling each of the named plaintiffs' transactions of LIBOR-based instruments designated New York law as governing. (Letter from William Carmody to the Court, Jan. 25, 2018, ECF No. 2414; Decl. of Geng Chen, Jan. 25, 2018, ECF No. 2415 ("Chen Decl.").) OTC defendants responded to this submission, identifying an ISDA Master Agreement governing certain transactions by named plaintiff Yale University that designated English law rather than New York law. (Letter from Abram Ellis to the Court, Feb. 1, 2018, ECF No. 2419; Decl. of Abram Ellis, Feb. 1, 2018, ECF No. 2420.) OTC plaintiffs responded that the Yale ISDA Master Agreement designating English law did not apply to any of Yale's LIBOR-based instruments. (Letter from William Carmody to the Court, Feb. 13, 2018, ECF No. 2424.)

Accepting this latter representation, the proposition that each of the ISDA Master Agreements underlying the named plaintiffs' LIBOR-based transactions with panel banks designated New York law as the substantive law to be applied is a correct one. But this fact hardly establishes that all of the class's ISDA Master Agreements so designated (or at least a sufficiently overwhelming percentage such that variations in controlling law do not pose predominance issues). Rather, Yale's English law ISDA Master Agreement -- even if did not ultimately support any of Yale's LIBOR-based transactions -- suggests that the designation of non-New York law in an ISDA Master Agreement is hardly hypothetical. Certain other named plaintiffs' designation of non-New York law -- even if limited to certain issues of law -- corroborates OTC defendants' suggestion that not all ISDA Master Agreements designate only New York law. Taken together, we find that this evidence is sufficient to suggest that for the class as a whole -- the inquiry of relevance here -- not all class members will have ISDA Master Agreements designating only New York law. In the absence of definitive evidence to the contrary, examples in the record of ISDA Master Agreements designating non-New York law render OTC defendants' argument here easily distinguishable from the "bald speculation" rejected by the Second Circuit in In re U.S. Foodservice, see 729 F.3d at 122. OTC plaintiffs have not established that all ISDA Master Agreements designate New York

law; any requirement that OTC defendants more actively disprove the proposition that New York law controls all ISDA Master Agreements would improperly invert the burden of proof.

Further, in focusing on whether the ISDA Master Agreements governing the LIBOR-based swaps have designated New York law, OTC plaintiffs have not addressed the choice-of-law issues relating to bonds, which remain equally relevant to the proposed class. Specifically, while ISDA Master Agreements govern swaps, no evidence in the record suggests that ISDA Master Agreements also govern bonds.[179] Rather, the structure and terms of the ISDA Master Agreement contemplate an ongoing relationship between two specified parties, which is applicable in the swap context but is incongruent with the more retail nature of bond issuances.[180] For example, provisions referring to the netting of payments have little bearing in this context: after the bond is initially purchased, payments are made only by the bond issuer to the bondholder. Similarly, provisions referring to default by either party (ISDA Master Agreement ¶ 5) are inapplicable in the context of a bond issuance, where the obligations flow only from the bond issuer to the bondholder; the concept of "default" by a bondholder in this context is nonsensical. In sum, the extensive references

[179] There is no evidence in the record pertaining to named plaintiffs who purchased LIBOR-based bonds from panel banks. This fact is perhaps unsurprising given that there are no named plaintiffs who so transacted.

[180] OTC plaintiffs also allege that floating-rate notes are not derivatives. (CTAC ¶ 43.)

of this type to mutual obligations suggest that the ISDA Master Agreements apply in the swap context but not the bond context. OTC plaintiffs have offered no evidence that all (or even most) LIBOR-based bonds were governed by New York law, under an ISDA Master Agreement or otherwise.

In sum, we find that while ISDA Master Agreements control the vast majority of swaps, they do not uniformly designate only New York law as controlling. Further, based on our reading of the ISDA Master Agreement and the absence of evidence relating specifically to bonds, we find that bonds encompassed within the proposed class definition are not governed by ISDA Master Agreements at all. Because ISDA Master Agreements apply to only a portion of the LIBOR-based instruments in the class, certification of the proposed class will likely require the application of the substantive laws of multiple jurisdictions to OTC plaintiffs' implied covenant claim. Variations in substantive law are therefore a relevant consideration, and we turn to that issue.

As OTC defendants correctly point out and other courts have identified, the scope of the implied covenant varies across states. See, e.g., Lane v. Wells Fargo Bank, N.A., No. C 12-4026 WHA, 2013 WL 3187410, at *4 (N.D. Cal. June 21, 2013) ("Plaintiffs' submission fails to address significant differences in state law raised by defendant, including whether the standard for good faith

is subjective or objective . . . ."); Yarger v. ING Bank, FSB, 285 F.R.D. 308, 325 (D. Del. 2012) ("The states' laws vary as to whether there is an intent element and, if so, what intent must be proven.").[181]

In response, OTC plaintiffs contend, citing the Second Circuit's holding in In re U.S. Foodservice that "state contract law defines breach consistently such that the question will usually be the same in all jurisdictions," 729 F.3d at 127, that variations in the state substantive law of the implied covenant of good faith and fair dealing do not preclude class certification. We are unpersuaded that In re U.S. Foodservice's holding, made in the context of claims for breach of contracts involving the sale of goods subject to the Uniform Commercial Code, see id., applies to OTC plaintiffs' claims for breach of the implied covenant of good faith and fair dealing. Additionally, In re U.S. Foodservice considered only contract claims under U.S. law; the record here suggests that application of English law will be required at least as to some swaps held by some class members.[182]

Additionally, in moving for class certification, the plaintiffs in In re U.S. Foodservice actually conducted an analysis

[181] OTC plaintiffs' reliance on Pinnacle Performance, which considered only implied covenant claims asserted under New York substantive law, see 2013 WL 5658790, at *12, for the proposition that a class may be certified on a claim for breach of the implied covenant is unpersuasive. Pinnacle Performance had no occasion to consider whether variations in controlling law impacted the predominance analysis.

[182] Of course, we know even less about the substantive law governing claims arising from class members' bond purchases.

of variations in state law, see, e.g., id. ("[P]laintiffs' papers in support of their motion for class certification demonstrate that all the relevant jurisdictions have adopted U.C.C. § 1-303."). By contrast, OTC plaintiffs have simply rested on their contention that no analysis of state-by-state variations need be undertaken and have not addressed the implied covenant of good faith and fair dealing under English law (OTC Pls.' Class Reply 24-25). The differences in state substantive laws identified by defendants -- that the scope of the implied covenant varies substantively between states -- stand essentially unrebutted, and we accordingly conclude that OTC plaintiffs have not carried their burden of establishing that variations in controlling law do not defeat predominance.

2.3.2.2. Unjust Enrichment

We consider unjust enrichment separately, as "[u]nder New York law, the choice of law analysis is generally done separately for each claim and defense." 2002 Lawrence R. Buchalter Alaska Tr. v. Phila. Fin. Life Assur. Co. ("Buchalter Trust"), 96 F. Supp. 3d 182, 200 (S.D.N.Y. 2015). "Some controversy appears to exist as to whether a claim for unjust enrichment is governed by a contract's enforceable choice-of-law provision, or whether it is instead governed by the law of the state that New York's interest analysis yields, being a fundamentally non-contractual cause of action." Id. at 233. While "[i]n general, New York courts are

reluctant 'to construe contractual choice-of-law clauses broadly to encompass extra-contractual causes of action,'" Tropical Sails Corp. v. Yext, Inc., No. 14 Civ. 7582 (JFK), 2017 WL 1048086, at *12 (S.D.N.Y. Mar. 17, 2017) (quoting Fin. One Pub. Co. Ltd. v. Lehman Bros. Special Fin., Inc., 414 F.3d 325, 334 (2d Cir. 2005)), "the more an unjust enrichment claim relates to an enforceable contract, the more likely it is to be considered contractual in nature for the purposes of New York's choice-of-law analysis," Buchalter Trust, 96 F. Supp. 3d at 234.

In light of our rulings in LIBOR II and LIBOR III that "the [swap] contracts did not clearly cover the subject matter now at issue, namely whether defendants were permitted to manipulate LIBOR itself and thereby depress the amount they were required to pay plaintiffs," LIBOR III, 27 F. Supp. 3d at 483, slip op. at *72 (alterations incorporated and internal quotation marks omitted) (quoting LIBOR II, 962 F. Supp. 2d at 630, slip op. at *51), we conclude that OTC plaintiffs' unjust enrichment claims sound more in tort than in contract. Indeed, as the Second Circuit held regarding unjust enrichment claims asserted by other plaintiffs who transacted directly with panel banks, such "unjust enrichment claims sound in fraud." Schwab, 2018 WL 1022541, at *18. Accordingly, the unjust enrichment claims are not controlled by the choice-of-law provisions contained in the ISDA Master Agreement Schedules. See Buchalter Trust, 96 F. Supp. 3d at 233-

34. Rather, under New York conflict-of-law principles, the "'interests analysis,' under which the law of the jurisdiction having the greatest interest in the litigation is applied," governs. Curley, 153 F.3d at 12. As with the fraud claims asserted in the Lender action, the law of the state in which the injury occurred applies under the interests analysis; each putative class member's unjust enrichment claim is subject to the state in which that class member has its principal place of business. See supra section IV.2.3.5.

This choice-of-law analysis notwithstanding, OTC plaintiffs contend that we should apply New York law because OTC defendants purportedly conceded the applicability of New York law to the unjust enrichment claims in an earlier memorandum of law. (OTC Pls.' Class Reply 26-27.) This argument, which relies on a memorandum of law filed in support of an earlier motion to dismiss, not only mischaracterizes that memorandum but also raises serious due process concerns.

In the memorandum in question, submitted in the course of briefing motions that we resolved in LIBOR III (Mem. of Law, Nov. 26, 2013, ECF No. 508 ("LIBOR III Defs.' Mem.")), OTC defendants argued that OTC plaintiffs had failed to state a claim under New York law. In so arguing, OTC defendants explained that "OTC Plaintiffs have not alleged that any other jurisdiction's law is applicable, and the Defendants therefore address the OTC

Plaintiffs' unjust enrichment and breach of implied covenant of good faith and fair dealing claims under New York law only." (LIBOR III Defs.' Mem. at 1 n.3.) Indeed, OTC defendants expressly noted the possibility that "[o]ther arguments may be available under other states' laws." (LIBOR III Defs.' Mem. at 1 n.3.) Given OTC defendants' express contemplation that the substantive laws of other states may apply, OTC plaintiffs' characterization of these statements as a concession that New York law applies is not a fair one; rather, it is an utter distortion.

But even assuming that some concession binds OTC defendants to the application of New York law, cf. Krumme v. WestPoint Stevens Inc., 238 F.3d 133, 138 (2d Cir. 2000), we are skeptical that any binding effect can permissibly extend to absent class members. Those class members may have an interest in applying the substantive law of other states, especially to the extent that other states' substantive laws of unjust enrichment are more favorable to them than New York's. Binding these absent class members to New York law on the basis of OTC defendants' concessions would not only come dangerously close to modifying those plaintiffs' substantive rights in violation of the Rules Enabling Act, cf. Dukes, 564 U.S. at 367 ("[T]he Rules Enabling Act forbids interpreting Rule 23 to 'abridge, enlarge or modify any substantive right.'" (quoting 28 U.S.C. § 2072(b))), but would also raise serious due process concerns as to those class members, cf. In re

Payment Card Interchange Fee, 827 F.3d at 231 ("Class actions and settlements that do not comply with . . . the Due Process Clause cannot be sustained."). These concerns cause us to roundly reject OTC plaintiffs' concession argument.

In sum, we conclude that each class member's unjust enrichment claims will be governed by the law of the state in which that class member has its principal place of business or resides, and proceed to consider whether variations in state law contribute individual issues.

Despite OTC plaintiffs' burden of showing that variations in state law do not present "insuperable obstacles" to class certification, In re U.S. Foodservice, 729 F.3d at 127, they have offered no analysis here beyond their contention that the ISDA Master Agreement causes New York law to be applied to all class members -- a contention that we reject for multiple reasons. Under such circumstances, courts have declined to certify a nationwide unjust enrichment class. See, e.g., It's Just Lunch, 300 F.R.D. at 143 (concluding that common issues did not predominate because "[p]laintiffs have not acknowledged any of these variations in states' unjust enrichment laws"); see also Kottler v. Deutsche Bank AG, No. 05 Civ. 7773 (PAC), 2010 WL 1221809, at *4 (S.D.N.Y. Mar. 29, 2010) ("[V]ariations in state law have generally precluded nationwide class certifications based on unjust enrichment theories.").

Rejection of nationwide unjust-enrichment classes is not a universal rule, and OTC plaintiffs correctly identify certain decisions that have certified nationwide unjust enrichment clases. See, e.g., Rapoport-Hecht v. Seventh Generation, Inc., No. 14 Civ. 9087 (KMK), 2017 WL 5508915, at *3 (S.D.N.Y. Apr. 28, 2017).[183] In the face of this split of authority -- a split that the Second Circuit has not resolved -- we find more persuasive in this action the line of cases declining to certify a nationwide class. Coupled with OTC plaintiffs' lack of analysis as to variations in state law, cf. In re U.S. Foodservice, 729 F.3d at 127, we conclude that variations in state law warrant a finding of no predominance here. "As countless courts have found, 'the states' different approaches to, or elements of, unjust enrichment are significant.'" Rapp v. Green Tree Servicing, LLC, 302 F.R.D. 505, 513 (D. Minn. 2014) (collecting cases and noting that "state laws vary widely regarding how 'unjust' a defendant's conduct must be to give rise to a recovery on an unjust-enrichment claim"); see also 1 McLaughlin on Class Actions § 5:60 (14th ed.) (Westlaw 2017) ("Where certification of a multistate unjust enrichment class is sought,

[183] Rapoport-Hecht considered variations in state substantive law in the context of a settlement class, see 2017 WL 5508915, at *3, where the analysis of predominance differs from that in the context of a litigation class. "In the context of a settlement class, concerns about whether individual issues would create 'intractable management problems' at trial" -- such as issues presented by variations in governing law -- "drop out of the predominance analysis because 'the proposal is that there be no trial.'" In re AIG, 689 F.3d at 240 (quoting Amchem, 521 U.S. at 620).

variations in state law also have precluded class certification based on unjust enrichment theories.").

2.3.2.1. Conclusion

Variations in substantive law defeat predominance for both the implied covenant claim and the unjust enrichment claim, though in slightly different ways. The implied covenant will require application of the law designated in transaction-specific ISDA Master Agreement Schedules, which do not uniformly designate New York law and may include English law.[184] The unjust enrichment claim will require application of the law of the state in which the class member resides or has a principal place of business, which under the class definition extends to all 50 states.

2.4. Modification of the Class Definition

In a submission made following oral argument, OTC plaintiffs suggest, for the first time in a serious manner, a modification of the class definition to limit the class to LIBOR-Based Instruments (as defined in the class definition) "that contained a contractual clause specifying that the contract is to be construed in accordance with the laws of the State of New York." (Letter from William Carmody to the Court, Jan. 25, 2018, ECF No. 2414.)[185]

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[184] Further, different transactions undertaken by the same class member may be subject to different substantive law, if those transactions occurred under different ISDA Master Agreements. The record establishes, at minimum, that the same named plaintiff incorporated differing choice-of-law provisions into different ISDA Master Agreement Schedules. (Chen Decl. 3-4.)

[185] OTC plaintiffs' reply brief, which rattled off in a footnote a series of possible modifications to the class definition (OTC Pls.' Class Reply 25

We are strongly disinclined to consider this belated proposal for modification. OTC plaintiffs have had ample time to introduce into the record before us the evidence that they ultimately submitted post-argument, and they could have rigorously analyzed issues regarding variations in state law. Instead, they offered an argument that, at best, overreads the ISDA Master Agreement.

However, Rule 23(c) contemplates that class certification is not a one-shot process, as "[a]n order that grants or denies class certification may be altered or amended before final judgment." Fed. R. Civ. P. 23(c)(1)(C). Indeed, the Second Circuit has interpreted Rule 23(c)(1)(c) to "require[] courts to 'reassess . . . class rulings as the case develops.'" Amara v. CIGNA Corp., 775 F.3d 510, 520 (2d Cir. 2014) (omission in original) (quoting Boucher v. Syracuse Univ., 164 F.3d 113, 118 (2d Cir. 1999)). Though we are loathe to make class certification an iterative process and strongly believe that proponents of class certification should be diligent in establishing their compliance with class certification requirements the first time around, cf. LIBOR II, 962 F. Supp. 2d at 626-27, slip op. at *42-43,[186] we will

n.60), does not qualify as serious analysis of modification. The footnote in question also asserts that "the vast majority of the LIBOR-based instruments in the class . . . are governed by New York law" based on the ISDA Master Agreement, which, as we discuss above, is unsupported by the record as to swaps and is entirely unfounded as to bonds.

[186] This principle should be especially applicable in a case such as this one, where we have issued opinions on substantive issues totaling more than 1000 pages and where certain class-certification concerns have been previously raised by the defendants, briefed by the parties, and addressed by the Court.

nonetheless exercise our discretion and consider -- however reluctantly -- OTC plaintiffs' proposal that the class definition be modified to limit the class to instruments governed by contracts designating New York law.

2.4.1. Implied Covenant of Good Faith and Fair Dealing

2.4.1.1. Remaining Choice-of-Law Issues

Turning to the implied covenant claims, OTC defendants argue first that the inclusion of a criterion requiring a New York choice-of-law provision does not resolve the choice-of-law issues plaguing the unmodified class definition. (Letter from Abram Ellis to the Court, Feb. 1, 2018, ECF No. 2419.) Citing certain named plaintiffs' ISDA Master Agreements belatedly supplied by the OTC plaintiffs, OTC defendants contend that even among choice-of-law provisions designating New York law, some explicitly exclude New York choice-of-law rules whereas others are silent on the issue. For example, one of named plaintiff Baltimore's ISDA Master Agreement Schedules designates simply "the laws of the State of New York," (Chen Decl. ex. C at 19), whereas another one of Baltimore's ISDA Master Agreement Schedules designates "the laws of the State of New York, without reference to its choice of law doctrine," (Chen Decl. ex. E at 7). Accordingly, OTC defendants contend, New York choice-of-law provision notwithstanding, that the determination of what substantive law to apply will continue to introduce individual issues.

New York law, however, appears to treat as identical a choice-of-law provision designating New York law exclusive of New York conflict-of-law principles and a choice-of-law provision designating New York law without such an exclusion. The New York Court of Appeals has addressed choice-of-law provisions and the impact of an express exclusion of New York conflict-of-law principles in two recent decisions, IRB-Brasil Resseguros, S.A. v. Inepar Invs., S.A., 20 N.Y.3d 310 (2012), and Ministers & Missionaries Benefit Bd. v. Snow, 26 N.Y.3d 466. IRB considered "whether a conflict-of-laws analysis must be undertaken when there is an express choice of New York law in the contract pursuant to General Obligations Law § 5-1401."[187] 20 N.Y.3d at 312. The main contract in question, a guarantee, provided that it would be "governed by, and . . . construed in accordance with, the laws of the State of New York," but did not contain an express exclusion of New York conflict-of-laws principles. Id. at 313. A companion agreement also contained a choice-of-law provision designating New York law, but that agreement did include an express exclusion of New York conflict-of-laws principles. See id. The Court of

[187] Section 5-1401 of the General Obligations Law provides that the parties to a contract "covering in the aggregate not less than two hundred fifty thousand dollars . . . may agree that the law of this state shall govern their rights and duties in whole or in part, whether or not such contract, agreement or undertaking bears a reasonable relation to this state." N.Y. Gen. Oblig. Law § 5-1401. This provision does not "apply to any contract, agreement or undertaking (a) for labor or personal services, (b) relating to any transaction for personal, family or household services, or (c) to the extent provided to the contrary in subsection two of section 1-105 of the uniform commercial code." Id.

Appeals concluded that New York substantive law governed the guarantee and that "parties are not required to expressly exclude New York conflict-of-laws principles in their choice-of-law provision in order to avail themselves of New York substantive law," relying on both the language of section 5-1401 of the General Obligations Law and guidance from the Restatement (Second) of Conflict of Laws. Id. at 315-16.

Ministers & Missionaries considered a related question. The contracts at issue in that case, a retirement plan and a death benefit plan, each contained a choice-of-law provision designating New York law with no exclusion of New York conflict-of-laws principles. See 26 N.Y.3d at 468. Because the contracts in question involved testamentary dispositions, they implicated section 3-5.1(b)(2) of the New York Estates, Powers & Trusts Law, which is itself a choice-of-law provision requiring that "[t]he intrinsic validity, effect, revocation or alteration of a testamentary disposition of personal property, and the manner in which such property devolves when not disposed of by will, are determined by the law of the jurisdiction in which the decedent was domiciled at death." N.Y. Est. Powers & Trusts Law § 3-5.1(b)(2).

The Court of Appeals concluded that New York substantive law applied based on the contracts' choice-of-law provisions, even though section 3-5.1(b)(2) of the Estates, Powers & Trusts Law

called for the application of the law of another jurisdiction. Ministers & Missionaries, 26 N.Y.3d at 477. Holding broadly that "New York courts should not engage in any conflicts analysis where the parties include a choice-of-law provision in their contract, even if the contract is one that does not fall within General Obligations Law § 5-1401" (as the contract at issue in IRB did), the Court of Appeals reasoned that "logic dictates that, by including a choice-of-law provision in their contracts, the parties intended for only New York substantive law to apply." Id. at 474-75.

Taken together, IRB and Ministers & Missionaries mandate the rejection of OTC defendants' argument distinguishing choice-of-law provisions expressly excluding New York conflict-of-laws principles and those silent on the matter. New York substantive law applies regardless. Accordingly, in this case, an ISDA Master Agreement with a choice-of-law provision designating New York law -- regardless of whether that provision expressly excludes New York conflict-of-laws principles -- will implicate the implied covenant under New York law. No further choice-of-law analysis is needed.[188]

[188] This application of IRB and Ministers & Missionaries is at least somewhat counterintuitive and renders superfluous contractual language in a choice-of-law provision expressly excluding New York conflict-of-law principles. Cf. Lawyers' Fund for Client Prot. v. Bank Leumi Tr. Co. of N.Y., 94 N.Y.2d 398, 404 (2000) ("[The proposed] interpretation would render the second paragraph superfluous, a view unsupportable under standard principles of contract interpretation."). Nonetheless, we are bound to apply New York law as

OTC defendants emphasize that an ISDA Master Agreement Schedule template recommends the inclusion of express language excluding New York conflict-of-laws principles within a choice-of-law provision, and contend that the contracting parties' deletion of such language suggests an intent that New York conflict-of-laws principles should apply. We are unpersuaded that such an inference is sufficient. Indeed, IRB considered two contracts with New York choice-of-law provisions, one with an express exclusion of New York conflict-of-laws principles and the other without. See IRB, 20 N.Y.3d at 313. The Court of Appeals did not find this difference to be significant; rather, it held that New York substantive law applied regardless. Id. at 315. The inference that OTC defendants seek to draw from the deletion of language expressly excluding New York conflict-of-laws principles from the schedule template is no stronger than any inference to be drawn from the two dissimilar contracts in IRB, and it is insufficient to escape the broad holdings of IRB and Ministers & Missionaries.

2.4.1.2. Application of New York Law

Accordingly, we analyze substantively the implied covenant under New York law. As we have previously summarized:

> Under New York law, "a covenant of good faith and fair dealing in the course of contract performance" is

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established by the New York Court of Appeals. See, e.g., Tiber Holding Corp., 277 F.3d at 253 ("[We], sitting in diversity, must follow the holdings of the New York Court of Appeals.").

> "[i]mplicit in all contracts." The implied covenant of good faith and fair dealing obligates a promisor to fulfill "any promises which a reasonable person in the position of the promisee would be justified in understanding were included" in the contract. Specifically, implied in every contract is a promise that "neither party shall do anything which will have the effect of destroying or injuring the right of the other party to receive the fruits of the contract."

LIBOR II, 962 F. Supp. 2d at 631-32, slip op. at *54-55 (quoting Dalton v. Educ. Testing Serv., 87 N.Y.2d 384, 389 (1995)). "The duty of good faith and fair dealing, however, is not without limits, and no obligation can be implied that 'would be inconsistent with other terms of the contractual relationship.'" Dalton, 87 N.Y.2d at 389 (quoting Murphy v. Am. Home Prods. Corp., 58 N.Y.2d 293, 304 (1983)).

The relevant inquiry called for by the implied covenant is objective, not subjective: we consider "any promises which a reasonable person in the position of the promisee would be justified in understanding were included." Id. at 389 (emphasis added) (quoting Rowe v. Great Atl. & Pac. Tea Co., 46 N.Y.2d 62, 69 (1978)). We accordingly reject OTC defendants' argument that the class members' subjective understandings of LIBOR will introduce additional individual questions. (OTC Defs.' Class Opp'n 24-25.) Given the strictly objective nature of this aspect of the class's implied covenant claims, this consideration does not weigh on the individual question side of the scale.

However, we lack OTC plaintiffs' confidence that a similar analysis of the implied covenant can be applied to all of the LIBOR-based instruments specified in the class definition. Because the implied covenant is limited by the "other terms of the contractual relationship," Dalton, 87 N.Y.2d at 389, the underlying contract must be analyzed. In this case, while ISDA Master Agreements (and accompanying schedules) govern the vast majority of swap transactions covered by the class definition, no evidence exists in the record as to whether bonds are similarly governed. Rather, as we analyzed above, the structure and format of the ISDA Master Agreement strongly suggests that bonds generally are not governed by ISDA Master Agreements at all. Again, OTC plaintiffs have offered no evidence of contracts governing bonds and have offered no analysis of whether those contracts may differ between bond issuances (even if issued by the same panel bank). In the face of this evidentiary void, we are skeptical that common questions will predominate over individual ones in analyzing the covenant of good faith and fair dealing implied in the contracts at issue.

This skepticism is confirmed by several additional dimensions of variation even within ISDA Master Agreements: some contain arbitration clauses, as suggested by an ISDA publication that "provides guidance on the use of an arbitration clause with either the ISDA 2002 Master Agreement . . . or the ISDA 1992 Master

Agreement . . . and includes a range of model arbitration clauses" (OTC Defs.' Class Opp'n 24 & n.19); some contain waivers of a right to trial by jury, as one of Jennie Stuart's and one of Baltimore's ISDA Master Agreements do (Chen Decl. ex. B at 36, ex. C at 21); and some designate exclusive jurisdiction in other forums, such as the designation of Maryland state court or federal court in the District of Maryland in two of Baltimore's ISDA Master Agreements (Chen Decl. ex. D sched. at 7, ex. E sched. at 7), and the designation of Pennsylvania state court or federal court in the Eastern District of Pennsylvania in Bucks County's ISDA Master Agreement (Poronsky Bucks County Decl. ex. B at 29). Each of these dimensions of variation raises individual issues bearing directly on the justiciability of a putative class member's claims in a class action before this Court.

2.4.2. Unjust Enrichment

Limiting the class to instruments with a choice-of-law provision designating New York law also does not salvage class treatment for OTC plaintiffs' unjust enrichment claims. Those claims do not arise under a contract in this case. See LIBOR III, 27 F. Supp. 3d at 483, slip op. at *72; LIBOR II, 962 F. Supp. 2d at 630, slip op. at *51; cf. Schwab, 2018 WL 1022541, at *18. Accordingly, OTC plaintiffs' unjust enrichment claims are not subject to any choice-of-law provision that may be contained in the contract(s) underlying the transaction. Thus, the proposed

modification would not ameliorate the predominance issues presented by variations in states' substantive laws of unjust enrichment.

2.4.3. Conclusion

Modification of the class definition in the manner proposed by OTC plaintiffs at the eleventh, or perhaps thirteenth, hour would not cure the deficiencies that we have previously identified. Common questions would not predominate OTC plaintiffs' implied covenant claims even when the individual issues raised by variations in state law are not weighed in the predominance analysis. OTC plaintiffs have not established that the contracts underlying the LIBOR-based instruments specified in the class definition are sufficiently similar in material respects, and the individual questions introduced by the variations within ISDA Master Agreements identified by the OTC defendants further weigh against predominance. Further, modification of the class definition would have no impact on the predominance analysis as to unjust enrichment, given that contractual choice-of-law provisions will not dictate the state substantive law under which the unjust enrichment claims will be analyzed.

2.5. Superiority

Once again applying the Rule 23(b)(3) factors, we conclude that class action treatment would be superior as to OTC plaintiffs'

antitrust claims, but not their state-law implied covenant and unjust enrichment claims.

As we have discussed in the context of the other putative class actions, class members lack a strong interest in individually controlling the prosecution of separate actions in the absence of serious conflicts between them, supporting a finding of superiority under Rule 23(b)(3)(A). This action has progressed further than the other actions asserting similar claims, thereby supporting superiority under Rule 23(b)(3)(B). The desirability of concentrating litigation in this forum for the reasons expressed by the JPML, see In re LIBOR-Based Fin. Instruments Antitrust Litig., 802 F. Supp. 2d at 1381, coupled with the absence of plaintiffs implicating "[c]oncerns about foreign recognition of our judgments," In re Vivendi, 838 F.3d at 264, also support a finding of superiority under Rule 23(b)(3)(C).

The antitrust claims and the state-law claims differ, however, under the manageability factor of Rule 23(b)(3)(D). As we have discussed, a nationwide class asserting state-law causes of action raises manageability concerns. See In re U.S. Foodservice, 729 F.3d at 127; see also 2 William B. Rubenstein, Newberg on Class Actions § 4:75 (5th ed.) (Westlaw 2017) (noting that in a nationwide class of state-law claims, "common issues may not predominate . . . and/or the case may be unmanageable and therefore not a superior method of litigation"). Further, OTC

plaintiffs have not attempted to demonstrate the feasibility of ameliorative measures such as the certification of subclasses grouped to accommodate variations in state law. Accordingly, as to OTC plaintiffs' state-law claims, we conclude that class-action treatment would not be superior to the maintenance of individual actions based on our manageability concerns. By contrast, OTC plaintiffs' antitrust claims, asserted under federal law, raise no such concerns; we accordingly find that class-action treatment would be superior as to those claims.

2.6. Conclusion

OTC plaintiffs' motion for class certification is granted in part and denied in part. A class limited to OTC plaintiffs' antitrust claims against Bank of America and JPMorgan Chase (Count 1 of the Corrected Third Consolidated Amended Complaint) will be certified. As to those claims, we conclude that OTC plaintiffs have sufficiently established the requirements of Rule 23, including the requirement that common questions predominate over individual ones. The individual questions of damages identified by OTC defendants are insufficient to defeat predominance or, by extension, certification.[189]

[189] Our decision to certify a class as to OTC plaintiffs' antitrust claims rests on the action in its current form, including on OTC plaintiffs' allegations of a sixteen-bank conspiracy to suppress LIBOR. To the extent subsequent developments in the case call into question those allegations or the other bases on which we rely, "[a]n order that grants or denies class certification may be altered or amended before final judgment," Fed. R. Civ. P. 23(c)(1)(C), and we must "ensure continued compliance with Rule 23's requirements," Amara, 775 F.3d at 520.

While we certify a class as to their antitrust claims, OTC plaintiffs have not established that common questions predominate as to their state-law claims for breach of the implied covenant of good faith and fair dealing and for unjust enrichment. Variations in the substantive law to be applied introduce individual questions defeating predominance and superiority for the class as initially proposed, and modification to limit the class to transactions including a New York choice-of-law provision would not tip the predominance balance as to these claims. Choice-of-law provisions do not govern OTC plaintiffs' unjust enrichment claims, and OTC plaintiffs have not established predominance in the analysis of their implied covenant claims given the variations in ISDA Master Agreements observed in the record and the lack of evidence as to LIBOR-based instruments not governed by ISDA Master Agreements.

For the foregoing reasons, a class is certified under Rule 23(b)(3), defined as follows:

> All persons or entities residing in the United States that purchased, directly from a Panel Bank (or a Panel Bank's subsidiaries or affiliates), a LIBOR-Based Instrument that paid interest indexed to a U.S. dollar LIBOR rate set any time during the period August 2007 through August 2009 ("Class Period") regardless of when the LIBOR-Based Instrument was purchased.

The term "LIBOR-Based Instrument" is defined with reference to page 298 of this opinion, and certain individuals and entities are excluded from the class consistent with the exclusion set forth on page 298 of this opinion. Additionally, the Mayor and City Council

of Baltimore, Maryland; the City of New Britain, Connecticut; Vistra Energy Corp.; Yale University; and Jennie Stuart Medical Center, Inc. are appointed as lead plaintiffs. Pursuant to Rule 23(g), and consistent with our prior order appointing interim co-lead class counsel, see Dec. 22, 2011 Order, ECF No. 90, Susman Godfrey LLP and Hausfeld LLP are appointed as class counsel.

VI. INTERLOCUTORY APPEALABILITY

Under Rule 23(f) of the Federal Rules of Civil Procedure, the Court of Appeals "may permit an appeal from an order granting or denying class-action certification." The Second Circuit has held that "[v]iews expressed by the district court at the time of class certification, although not required, would be relevant to our determination of whether interlocutory appeal is warranted." In re Sumitomo Copper Litig., 262 F.3d 134, 140 (2d Cir. 2001). A party "seeking leave to appeal pursuant to Rule 23(f) must demonstrate either (1) that the certification order will effectively terminate the litigation and there has been a substantial showing that the district court's decision is questionable, or (2) that the certification order implicates a legal question about which there is a compelling need for immediate resolution." Id. at 139. "The first category comprises the so-called 'death knell' cases and their counterparts -- namely cases in which the class certification order effectively terminates the litigation either because the denial of certification makes the

pursuit of individual claims prohibitively expensive or because the grant of certification forces the defendants to settle." Id. at 138. The second category requires a "novel legal question . . . of fundamental importance to the development of the law of class actions and . . . is likely to escape effective review after entry of final judgment." Id. at 140.

Accepting the Circuit's invitation to express our views as to the propriety of interlocutory review, we offer the following observations. First, all three groups of plaintiffs have been afforded more discovery than is typical at the class certification stage. The class certification schedule lasted for almost a year and a half (Letter to Counsel from the Court, Dec. 23, 2015, ECF No. 1268), and as counsel for OTC plaintiffs have summarized, the record in this case has included more than 1.1 million documents and 6000 audio files (Dec. 15, 2017 Motion, ECF No. 2386). As we recognized even before the class certification process began in earnest, plaintiffs have had access to the materials generated by "multiple government investigations, consent decrees, [and] trials" regarding LIBOR manipulation. (Dec. 16, 2015 Hr'g Tr. 21:1-2, ECF No. 1271.)

Thus, the record is well-developed, and this extensive record has been considered in reaching the certification decisions set forth above. The parties have had ample time to marshal the strongest evidence in support of or in opposition to class

certification, and the time to supplement the record -- at least for class certification purposes -- has passed. A lingering possibility as to the existence of more documents or data, potentially relevant to the propriety of certification but undiscovered after more than six years of litigation, will not be sufficient to render our certification decisions "questionable."

Second, in resolving these motions, we have analyzed -- over the course of several hundred pages -- each of the class certification requirements as they pertain to the three proposed classes, even when doing so was not strictly necessary to reach a decision on the certification question itself. Issues of standing, the varying definitions of what constitutes "injury," and the applicability of the First Circuit's decision in In re Nexium in this circuit have presented some challenge, and further clarity on those issues may broadly be helpful. However, none of our holdings depends strictly on our analysis of an unsettled area of law; rather, they represent our application of well-settled principles of class certification law to a unique set of facts. Accordingly, we do not view class certification in this case as having presented any "novel legal question[s] . . . of fundamental importance to the development of the law of class actions" that are also "likely to escape effective review after entry of final judgment." In re Sumitomo, 262 F.3d at 140.

VII. CONCLUSION

In the Exchange-based action, Rabobank's motions to exclude the opinions of Dr. Seyhun and Mr. Miller are granted; Rabobank's motions to exclude the opinions of Dr. Netz and Mr. Beevers are granted in part and denied in part; and Exchange plaintiffs' motions to exclude certain of Dr. Culp's and Dr. Hubbard's opinions and to exclude all of Dr. Willig's opinions are denied. Exchange plaintiffs' motion for class certification is denied.

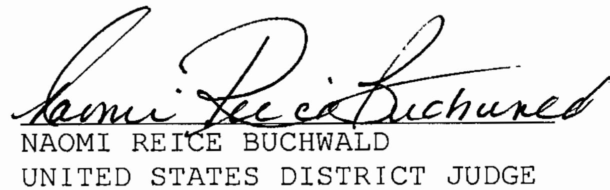
In the Lender action, Lender defendants' motion to exclude certain opinions of Dr. Webb's is granted; Berkshire's motion to exclude certain opinions of Dr. Willig's is denied. Berkshire's motion for class certification is denied.

In the OTC action, OTC defendants' motion to exclude Dr. Stiglitz's opinions is granted in part and denied in part. OTC plaintiffs' motion for class certification is also granted in part and denied in part, with a class certified only as to OTC plaintiffs' antitrust claims against Bank of America and JPMorgan Chase as set forth fully in Section V above.

This memorandum and order resolves the motions listed at docket entries 1885, 1887, 1904, 2011, 2018, 2021, 2053, 2055, 2057, 2059, 2067, 2069, and 2072.

SO ORDERED.

Dated: New York, New York
February 28, 2018



NAOMI REICE BUCHWALD
UNITED STATES DISTRICT JUDGE