Tampering with List Selection by Enhancing the Appointment Frequency of "Chair-Qualified" Arbitrators

By Scot Bernstein

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In the recently-filed "Amendment 5" to its proposed rewrite of the Code of Arbitration Procedure,[1] the NASD continues previous versions' division of all "public" arbitrators[2] into two separate groups: those who meet the NASD's definition of "chair-qualified arbitrators" and those who do not.[3] But Amendment 5 amplifies the dominance of the chair-qualified arbitrators by infusing members of that favored group into the "non-chair-qualified" group for list selection purposes.[4] Thus, arbitrators from the "chair-qualified" group will serve both as panel chairs and as public non-chairs in many cases. This newest wrinkle might seem innocuous at first blush. When examined quantitatively, however, it reveals a serious and problematic consequence: the arbitrators who are in the chair-qualified group will serve far more frequently than those who are not. The impact is far from trivial, as will be proven in this article.

The irony of this is that it is contrary to at least one reasonable interpretation of the NASD's own representations to the SEC regarding what the new arbitrator selection system will achieve. At page 22 of its Amendment 5 filing, the NASD states as follows:

> "NASD believes that eliminating the ability to select an arbitrator based on expertise and implementing the random selection function of NLSS will expand use of the full arbitrator pool, **so that all arbitrators on the lists will have the same chance of being selected for any case.**" [Emphasis added.]

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[1] Unless otherwise specified, the term "Code" refers to the NASD's new Code of Arbitration Procedure as set forth in its fifth amendment to that proposed code, originally filed with the Securities and Exchange Commission as SR 2003-158.

[2] The term "public" is a commonly-used shorthand way of referring to arbitrators who meet the Code's definition of arbitrators who are not affiliated with the securities industry, *i.e*, who are not "industry arbitrators." Active controversies regarding the deep industry ties of some arbitrators who qualify as "public" under the definition, whether the definition needs further tightening, and the lack of policing which has allowed industry arbitrators to be and remain misclassified as "public" for extended periods of time are beyond the scope of this article.

[3] Thus, under the new Code, panel chairs, public non-chairs and industry arbitrators will be chosen separately by striking and ranking three separate lists instead of the current two.

[4] Proposed Rule 12400(b) states:
"NASD maintains the following roster of arbitrators:
• A roster of non-public arbitrators as defined in Rule 12100(n);
• A roster of public arbitrators as defined in Rule 12100(r); and
• A roster of arbitrators who are eligible to serve as chairperson of a panel as described in paragraph (c).
Arbitrators who are eligible to serve as chairperson will also be included in the roster of public arbitrators, but will only appear on one list in a case.

If the NASD's proposal to give chair-qualified arbitrators two bites at the apple is approved, different public arbitrators will have very different chances of being selected for any given case.

It is unclear whether the NASD has considered the quantitative problems with its proposal. What is clear, however, is that those concerns are not addressed in its rule filing. While the quantitative problems make approval of the NASD's proposal inappropriate, the NASD's failure to address them makes its request for accelerated approval doubly so.[5]

This article's conclusions about the proposed rule's quantitative impacts on list selection are not based upon speculation or arguable assumptions. They are not empirical in nature and do not await experimental confirmation. Rather, they are knowable *a priori* based solely on a straightforward application of algebra to the NASD's proposed selection rules.

If the proposed rule is approved, the SEC will have permitted the NASD to divide its public arbitrator pool into two groups and to tamper with arbitrator selection so that members of one group will sit in judgment of customer claims far more often than members of the other. Arrangements of that kind have the look of a fixed race and can be expected to erode confidence on the part an investing public that already is weary of securities industry scandals and justifiably cynical about arbitration.

It is a rare instance when the quantitative consequences of a rule filing are calculable with algebraic precision. But this is one such instance. It would be unfortunate for the investing public and an embarrassment to the SEC if the rule were to be approved on an accelerated basis, without the SEC and the

public even having an opportunity to consider its clearly provable consequences.

This article is divided into two sections. The first addresses briefly the policy concerns raised by the NASD's proposed skewing of list-selection. That section begins with a brief table of sample outcomes to give a preview of the greatly increased frequency with which chair-qualified arbitrators will be appointed and the dramatically reduced frequency with which non-chair-qualified arbitrators will be appointed under the NASD's proposed rule. It then discusses non-quantitatively the potential adverse impacts on investors of a rule that makes chair-qualified arbitrators far more likely than non-chair-qualified arbitrators to sit in judgment of investors' claims.

The next section quantifies the problem. It begins with a straightforward series of numerical calculations demonstrating the skewing that would occur in a hypothetical hearing location with 40 chair-qualified public arbitrators and 40 non-chair-qualified public arbitrators. Following that series of calculations is the derivation of a parallel series of formulas describing the skewing algebraically. The formulas derived in that part will enable the reader, using any combination of pool sizes, to calculate the precise impact of the NASD's proposed rule.

1. Sample Outcomes and Policy Considerations

First, here are some sample outcomes. In this table, "tampered" refers to the arbitrators' relative odds of sitting on an arbitration panel if members of the chair-qualified group are favored with "two bites at the apple" as the NASD proposes; "untampered" refers to their odds if each group stands alone on equal footing with the other, as list selection would have been conducted under the revised code prior to Amendment 5

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[5] As of this writing, the NASD is seeking accelerated approval of this aspect of Amendment 5. Therefore, readers opposed to this tampering with list selection should file their comments with the SEC quickly.

Number of Chair-Qualified Arbitrators "x"	Number of **Non**-Chair-Qualified Arbitrators "y"	Chair vs. Non-Chair Relative Odds of Serving if Selection is **Untampered**	Chair vs. Non-Chair Relative Odds of Serving if Selection is **Tampered** to Boost Chairs' Odds
100	100	1 to 1	2.84 to 1
40	40	1 to 1	2.60 to 1
50	100	2 to 1	3.68 to 1
100	50	0.5 to 1	2.34 to 1

Perhaps the biggest problem with this tampering with the arbitrators' odds of serving on panels – aside from the failing of the "smell test" inherent in allowing the NASD to divide public arbitrators into two groups and then hugely favor one group over the other – is the public perception that arbitrators with substantial numbers of closed cases, all of whom will be "chair-qualified" under the revised code, are particularly lacking in independence.

To serve frequently, arbitrators must be mutually ranked – that is, they must not receive a "strike" from either party during the strike-and-rank process. Thus, as a practical matter, the arbitrators who serve most frequently will be those who have succeeded in keeping their balance of customer victories and customer losses reasonably close to the 50-50 mark; avoided awarding attorneys' fees or even interest, notwithstanding the fact that many state securities acts expressly provide for those remedies; and shunned punitive damage awards and similar remedies that would make them stand out as an obvious strike for industry defense counsel. Issuing split-the-baby awards may help those arbitrators as well. What this often means is that arbitrators can enhance their odds of being appointed by nullifying laws enacted for the protection of investors.

In short, arbitrators who want to be appointed will benefit by exhibiting a lack of the judicial independence that the Founding Fathers recognized as so clearly important when they built protection of federal judges' tenure and salaries into Article III of the U.S. Constitution. The "arbitral dependence" that comes about as a result of arbitrators' desire to serve and serve again is well known. Exacerbating the problem by inviting those most proficient in displaying a "split-the-baby" mentality to sit far more often than they otherwise would does not qualify as appropriate stewardship of American capital markets.

And that is not the only problem. Imagine how long it will take new non-chair-qualified public arbitrators to try the two cases to award (or for non-lawyers, three cases) that are required to become chair-qualified.[6]

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[6] Imagining really isn't necessary. Dividing the result in "B5" (below) by the result in "B6" (also below) reveals that it can be expected to take $(x + y – 8)/y$ times as long to be appointed to any given number of cases. It will take still longer to carry the required number of cases through to award, given that only 22% of filed cases go all the way to award. As the NASD stated at page 22 of its Amendment 5 filing:

> "Last, NASD believes that the requirement that an arbitrator serve on at least three arbitrations through award to be eligible for the chair roster is an objective standard that is easily measured. **While this standard is easy to measure, it is not easy to meet. Of the arbitration cases filed in the past four years, approximately 22% went to hearing."**

As stated previously, the NASD has given no indication that it understands the quantitative implications of its rule. The difficulty it describes in becoming chair-qualified did not even account for the further lengthening of the required time described in this article. This suggests a future in which chair-qualified arbitrators are firmly entrenched, and entry into that favored group will be rare indeed.

Indeed, the dramatically reduced odds of being appointed can be expected to have a number of negative impacts on the non-chair-qualified public pool and on recruitment of new arbitrators. To name three that come quickly to mind, (1) for many new arbitrators, arbitrator training will be a distant memory by the time they finally get to serve for the first time; (2) some new arbitrators will simply lose interest and give up, irritated that they spent time and money to become arbitrators in the first place; and (3) potential arbitrators who hear from those who have experienced the problems identified in "(1)" and "(2)" may not even complete an application.

Other problems arise out of the increased frequency with which chair-qualified arbitrators will be mutually ranked and asked to serve if the NASD's proposal is approved. This inevitably will increase the frequency with which arbitrators decline appointments to panels. The already-disturbing problem of last-minute resignations can be expected to worsen as well. Either way, whether early in the case or on the eve of hearing, there will be more administrative appointments. Thus, with the new rule in place, the parties will lose some of the control over their disputes that list selection was supposed to enhance.

Those who are not convinced by the practical arguments above regarding the differences between chair-qualified and non-chair-qualified arbitrators can come to similar conclusions by taking what might be called a "black box" approach to the problem. For this purpose, forget about what it means to be "chair-qualified." Instead, suppose only that the NASD has been permitted to divide an arbitrator pool into two groups and to determine, by rule or roster, which arbitrators

will be in each group. Next, you learn that the NASD seeks permission to implement a rule that will cause arbitrators in one group to decide disputes far more often than those in the other group. Faced with this stripped-down black box scenario, which of the following seems more likely: (1) that the rule favoring one group of arbitrators over the other will be absolutely neutral in its impact, or (2) that the rule somehow will work to the benefit of the NASD's member firms? Allowing the NASD's proposed change will create, at the very least, the appearance of a stacked deck.

It is not as though chair-qualified arbitrators would be disenfranchised in the absence of the NASD's latest wrinkle. There already will be one on every panel, even without the proposed rule. And that arbitrator, by serving as panel chair, will have a heightened opportunity to influence the outcome of the case. Further, the chair-qualified arbitrator will be the only arbitrator in a one-arbitrator case.[7] So the question is not whether chair-qualified arbitrators will have a voice in the outcome of arbitration proceedings. The question is whether the NASD should be permitted to adopt a rule that frequently will cause members of the chair-qualified group to have still greater influence by occupying both public seats instead of one.[8]

2. Quantifying Skewing and Deriving a Formula

This section quantifies the skewing of list selection that will be brought about by the proposed rule. To make this more approachable, Part "A" of this section works through a series of ten simple numerical calculations based on a hypothetical hearing

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[7] See Proposed rule 12403(a).

[8] If there are x chair-qualified arbitrators and y non-chair-qualified arbitrators in a hearing location, chair-qualified arbitrators will occupy both public seats on three-arbitrator panels $(x - 8)/(x + y - 8)$ of the time. For example, if $x = y = 50$ (so that there are 50 chair-qualified arbitrators and 50 non-chair-qualified arbitrators), chair-qualified arbitrators can be expected to occupy both public seats on 42/92, or approximately 46%, of three-arbitrator panels.

location with 40 chair-qualified public arbitrators and 40 non-chair-qualified public arbitrators. The benefit of beginning the quantitative discussion with actual numbers instead of the variables "x" and "y" is that doing so will make it easier to see what is happening to the quantities involved and may help to impart a more intuitive feel for the size of the problem.

Part "B" of this section then will generalize the analysis, replacing each numerical calculation with an algebraic formula. Using the resulting formulas, anyone with knowledge of the number of arbitrators in the chair-qualified pool and the non-chair-qualified pool will be able to determine the precise consequences of the tampering for which the NASD is seeking accelerated approval.

The derivation of formulas in Part "B" is not the product of complicated mathematics. It should be accessible to anyone who has had a year of algebra. While the expressions may look daunting at first, you will see that, when boiled down, the resulting formulas are simple and elegant. To make this more

approachable, the article shows each step in the calculations and derivations and, in addition, provides plain-English explanations where they will be helpful.

Readers who are good at algebra will find all of this quite easy. It is my hope that those whose algebra skills are a bit rusty will find them less rusty after working through Part "B." The key to reading Part A and especially Part B (or any other mathematical discussion, for that matter) is to read them slowly and to think about each step until you are sure you understand why it is correct (or can show why it is in error). The plain-English explanations accompanying each mathematical statement may prove helpful in this regard.

While probability concepts also figure in this analysis, the knowledge of probability theory required for an understanding of the quantitative discussion below is minimal. That may seem surprising at first, given that arbitrators will be selected at random[9], rather than by "rotation," under the revised code of arbitration procedure.[10] [11] [12]

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[9] See Rule 12400(a):

> **"12400. Neutral List Selection System and Arbitrator Rosters**
> **(a) Neutral List Selection System**
> The Neutral List Selection System is a computer system that generates, on a random basis, lists of arbitrators from NASD's rosters of arbitrators for the selected hearing location for each proceeding. The parties will select their panel through a process of striking and ranking the arbitrators on lists generated by the Neutral List Selection System."

[10] The current "rotational" system is not a rotation at all. Rather, it employs an algorithm that attempts to match what a true rotation would do. It does this without complete success. For more about this, see Bernstein, Scot, "Understanding NLSS or How I Learned To Stop Worrying and Love List Selection," *PIABA Ninth Annual Meeting*, October 2000.

A number of public comments filed in response to prior amendments to the revised code of arbitration procedure called for annual audits of the NASD's new "random" system for generating lists of arbitrators for striking and ranking purposes. The comments sought to inject a bit of transparency into the arbitrator selection process. Here is the relevant text from the NASD's Amendment 5 filing, at page 20:

> **"Neutral List Selection System and Arbitrator Rosters (Rule 12400(a))**
>
> Nineteen commenters suggest that NASD hire a neutral third party, not connected to NASD or the securities industry, to conduct an annual audit of the Neutral List Selection System (NLSS), and make the results of the audit publicly available on NASD's Web site.

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NASD is committed to ensuring that the NLSS operates as described in the Customer Code. Thus, NASD plans to hire an independent auditor to conduct an initial audit of the system and will make public the results of the audit. Thereafter, NASD will conduct an audit on an as needed basis."

See NASD Amendment Number 5 to SR-NASD-2003-158, May 4, 2006, page 20 (footnote omitted).

Apparently, the NASD thinks that having a one-time independent audit at the inception of a system that will select arbitrators for thousands of disputes each year for many years is sufficient because it will conduct further audits on its own (it doesn't say whether those results will be made public) whenever it wants (what else could "as needed" mean, given that the NASD gets to decide when an audit is "needed"?).

[11] As long as we're discussing other problems with the NASD's proposal, here's another: ties during the process of consolidating rankings will be handled in a less desirable manner under the proposed rule. The proposed approach is described in footnote 63 to the NASD's Amendment 5 filing, at page 23:

"63 The system will select randomly one name at a time for each list (i.e., chair, public, non-public), and list the names in the order in which they were selected. The first arbitrator selected would be Arbitrator #1; the second would be Arbitrator #2, etc. After the parties have made their selections and the lists have been consolidated, in the unlikely event of a tie among arbitrators, the system will break the tie based on the order in which the arbitrators were placed on the list. So, for example, if Arbitrators 3 and 5 are "tied" after the public lists are consolidated, the system will select Arbitrator 3 for the public non-chair position, because the system selected him or her before Arbitrator 5."

Previously, ties were broken based on the lowest difference between the parties' rankings. For example, if your #1-ranked arbitrator were my #3-ranked arbitrator, and if your #2-ranked arbitrator were my #2-ranked arbitrator, both arbitrators would tie for top-ranked with the same sum: 4. But two minus two is less than three minus one, so the arbitrator ranked as both parties' second choice would be chosen. The greater fairness inherent in using the lowest difference as the tie-breaker is self-evident. The NASD's proposal, while it may make things administratively easier for the NASD, comes at some cost in terms of fairness. The NASD's "order of selection" approach should be used only when two arbitrators are tied in both sums and differences.

[12] Other list-selection problems arise in connection with "strikeouts" – situations in which the joint selection process leaves no one standing. While the limited strikes in the proposed rule will make strikeouts less common, they still will occur. An example would be the situation in which the lone mutually-ranked arbitrator could not or would not agree to serve. Proposed rule 12406(c) will handle strikeouts as follows:

"**12406. Appointment of Arbitrators; Discretion to Appoint Arbitrators Not on List**. . .

(c) If the number of arbitrators available to serve from the combined list(s) is not sufficient to fill an initial panel, the Director will appoint one or more arbitrators of the required classification to complete the panel from names generated randomly by the Neutral List Selection System. If the Director must appoint a non-public arbitrator, the Director may not appoint a non-public arbitrator as defined in Rule 12100 (p)(2) or (3), unless the parties agree otherwise. The Director will provide the parties information about the arbitrators as provided in Rule 12403 and the parties will have the right to challenge the arbitrators as provided in Rule 12410."

The first sentence of this text could be interpreted to give the Director the right to pull a number of randomly-selected names from the system and to make the choice from among them to fill the vacancy. That would be unfair to investors, who should not have to vest discretion to choose arbitrators in an organization that is, after all, a membership association of the investors' opponents. A better and fairer approach, one that would enhance rather than detract from the parties' control over their dispute, would be to fill all vacant seats (whether they occur by strikeout, by later resignation of an arbitrator, or by any other means) in the following order of preference: (1) If there are arbitrators in the same classification who were mutually ranked by the parties (*i.e.*, not stricken by either party), then the highest ranked among those arbitrators shall be appointed to fill the vacancy; (2) if there is no mutually-ranked arbitrator in the

Nonetheless, the only probability concepts needed for an understanding of this paper are those which many readers probably understand intuitively:

1. If you are in a group of ten people out of which one person will be picked at random, you have a 10% chance – or equivalently, a probability of 1/10 – of being picked.

2. The sum of the probabilities of all possible outcomes, taken together, must equal 1.0 or, equivalently, 100%. For example, if you will either be late or not be late and there is no other possibility, and if you have a 30% chance of being late, then you must have a 70% chance of not being late.

3. The probability of a sequence of independent events occurring is the product of the probabilities of the individual events. For example, if the probability of "heads" is ½, the probability of tossing "heads" three times in three tosses is ½ x ½ x ½, or one in eight. Indeed, each of the eight possible sequences that can occur in three tosses of a coin has this same probability; and, consistent with item 2 above, 8 x 1/8 = 1.

The calculations and the derivations of formulas below assume application of the NASD's proposed rules that (1) a list of 8 potential chairs will be drawn randomly from the chair-qualified pool; (2) all *other* arbitrators in the chair-qualified pool will be combined with the arbitrators in the non-chair-qualified pool and a list of 8 potential non-chair public arbitrators will be drawn randomly from that combined pool; and (3) the parties then will proceed with striking and ranking. The illustrative numerical calculations in Part "A" assume, in addition, that there are exactly 40 chair-qualified arbitrators and exactly 40 non-chair-qualified arbitrators.

That's it. The calculations and formula derivations below are not based on assumptions that are controversial or the subject of argument. Rather, they are knowable *a priori*, the result of a straightforward application of algebra to the NASD's proposed rule.

A. Calculations Assuming 40 Arbitrators in Each Pool

For purposes of these calculations,

Let $P_{\text{described event}}$ = probability of that event.

A1. Average Probability[13] of Chair-Qualified Arbitrator Serving as Chair:

$$P_{\text{chair-qualified arbitrator serving as chair}} = \frac{8}{40} \cdot \frac{1}{8} = \frac{1}{40} = \frac{9}{360}$$

In plain English, a chair-qualified arbitrator in a pool of 40 has, on average, 8 chances in 40 of being placed on a chair strike-and-rank list and 1 chance in 8 of being selected as chair. A chair-qualified arbitrator's chances of serving as chair are, of course, independent of and unaffected by any tampering with the selection of the non-chair. And a chair-qualified arbitrator's chances of serving in any capacity in the absence of tampering are equal to that individual's chances of serving as chair because, without tampering, chair is the only available position. I have provided the conversion of 1/40 to 9/360 for reasons that will become apparent in A3, below.

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appropriate classification to fill the vacancy, then the next randomly-selected arbitrator in that classification shall be appointed to fill the vacancy.

A2. Average Probability of Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Untampered:

$P_{\text{chair-qualified arbitrator serving as non-chair if selection untampered}} = 0$

> This is simply a mathematical way of expressing the idea that, absent the tampering inherent in the NASD's proposed rule, a chair-qualified arbitrator would have no chance of serving as a public non-chair.

A3. Average Probability of Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Tampered to Boost Chairs' Odds:

$P_{\text{chair-qualified arbitrator serving as non-chair if selection tampered}} = \dfrac{32}{40} \cdot \dfrac{8}{72} \cdot \dfrac{1}{8} = \dfrac{1}{90} = \dfrac{4}{360}$

> A chair-qualified arbitrator in a pool of 40 has, on average, 32 chances in 40 of ***not*** being placed on a chair strike-and-rank list and instead being added into the 40-arbitrator non-chair roster to create a 72-arbitrator combined roster; eight chances in 72 of being placed on a non-chair strike-and-rank list; and 1 chance in 8 of being selected as the non-chair public arbitrator. The reason for expressing the results in 360ths is now clear: that figure serves as a common denominator that will make it possible to add the results of A1 and A3.
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> One further comment is in order here, because it will be useful in A4 and A7, below: this probability of a chair-qualified arbitrator serving in an additional capacity (*i.e.*, as a public non-chair) represents the *increase* in the chair-qualified arbitrator's probability of serving in *any* capacity.

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[13] "Different arbitrators will be differently ranked. Thus, their individual probabilities of serving cannot be determined. But, in a group of eight arbitrators of which one must serve as chair, the **average** probability of serving for the eight arbitrators is 1/8. Similarly, when the groups of chair-qualified and non-chair-qualified arbitrators are mixed for public non-chair selection purposes as the NASD has proposed, we cannot say whether there is any difference between an average chair-qualified arbitrator's and an average non-chair-qualified arbitrator's probabilities of being mutually ranked and selected as the public non-chair. The calculations and derivations in this article assume that arbitrators from the two groups, once their names are included on a public non-chair strike-and-rank list, have the same average probability of being selected.

A4. Average Probability of Chair-Qualified Arbitrator Serving In Any Capacity if Selection Tampered to Boost Chairs' Odds (see A1 and A3):

$$P_{\text{chair-qualified arbitrator serving on panel in any capacity if selection tampered}} = \frac{9}{360} + \frac{4}{360} = \frac{13}{360}$$

This is just the sum of A1 and A3 – the average probabilities of serving as the chair and as the public non-chair, respectively.

A5. Average Probability of *Non*-Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Untampered:

$$P_{\text{non-chair-qualified arbitrator serving as non-chair if selection untampered}} = \frac{8}{40} \cdot \frac{1}{8} = \frac{1}{40} = \frac{9}{360}$$

A non-chair-qualified arbitrator in a pool of 40 has, on average, 8 chances in 40 of being placed on a non-chair strike-and-rank list and 1 chance in 8 of being selected as non-chair – the same as a chair-qualified arbitrator's chances of being selected as chair out of a 40-arbitrator chair-qualified roster. Note that a non-chair-qualified arbitrator's chances of serving in any capacity are equal to that individual's chances of serving as public non-chair because non-chair is the only position available to non-chair-qualified arbitrators.

A6. Average Probability of *Non*-Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Tampered to Boost Chairs' Odds:

$$P_{\text{non-chair-qualified arbitrator serving as non-chair if selection tampered}} = \frac{8}{72} \cdot \frac{1}{8} = \frac{1}{72} = \frac{5}{360}$$

A non-chair-qualified arbitrator in a combined pool of 72 has, on average, 8 chances in 72 of being placed on a non-chair strike-and-rank list and 1 chance in 8 of being selected as non-chair – a 44% reduction in the non-chair-qualified arbitrator's likelihood of being appointed.

Note that the non-chair's chances of serving are now 5/360, a decrease of 4/360 from the untampered figure of 9/360 shown in A5. As must be the case, this 4/360 reduction is equivalent to a chair-qualified arbitrator's chances of serving as a public non-chair if the system is tampered. In other words, the tampering has the effect of *transferring* a 4-in-360 chance of serving as a public-non-chair from the non-chair-qualified arbitrators to the chair-qualified arbitrators.

A7. Average Percentage Increase in Probability of Chair-Qualified Arbitrator Serving In Any Capacity as a Result of Tampering (see A1 through A4):

Average Percentage Increase = $\dfrac{4}{360} \div \dfrac{9}{360} = 44\%$

This is A3 divided by A1 or, equivalently, (A4 minus A1) divided by A1.

A8. Average Percentage Decrease in Probability of *Non*-Chair-Qualified Arbitrator Serving as a Result of Tampering (see A5 and A6):

Average Percentage Decrease = $\dfrac{4}{360} \div \dfrac{9}{360} = 44\%$

This is (A5 minus A6) divided by A5. Note that the non-chair-qualified arbitrator's 44% decrease equals the chair-qualified arbitrator's 44% increase (see A7).

A9. Ratio *Without* Tampering of
- Average Chair-Qualified Arbitrator's Probability of Serving in Any Capacity
to
- Average *Non*-Chair Qualified Arbitrator's Probability of Serving in Any Capacity
(*i.e.,* A1 divided by A5)

Ratio = $\dfrac{9}{360} \div \dfrac{9}{360} = 1.0$

Thus, when they come from pools of equal size, the chair-qualified arbitrator has no advantage over the non-chair-qualified arbitrator in the absence of tampering.

A10. Ratio *With* Tampering of
- Average Chair-Qualified Arbitrator's Probability of Serving in Any Capacity
to
- Average *Non*-Chair Qualified Arbitrator's Probability of Serving in Any Capacity
 (*i.e.,* A4 divided by A6)

Ratio = $\dfrac{13}{360} \div \dfrac{5}{360} = 2.6$

>   (***Thus, chair-qualified arbitrators have gone from being on equal footing***
>   ***with non-chair-qualified arbitrators (based on equal pool size) to being***
>   ***selected, on average, 2.6 times as often.***)

Let me expand a bit on this last calculation. To make probabilities more approachable and intuitive, it sometimes helps to replace them with something more concrete. Suppose you and I each have ten dollars. We both have the same amount of money. Next, suppose I get an extra five dollars. Now I have one and a half times as much money as you have, right? Well, it depends. If I got that extra five dollars from some third-party source, the answer is "yes." But if I got the five dollars by taking it from you, I now have three times as much money as you have.

The probability situation is much the same. To simply the example, if I am one of ten chair-qualified arbitrators and you are one of ten non-chair-qualified arbitrators, each of us has an equal one-in-ten chance of serving on any given panel. But if all ten of the chair-qualified arbitrators suddenly are injected into the non-chair-qualified arbitrators' selection process, I now have not only my one chance in ten of being selected as chair, but an additional chance in twenty of being selected as a public non-chair. So now I have three chances in twenty of being selected. You, in contrast, now have only one chance in twenty of serving, down from your previous one in ten. And I now have three times the chance to serve that you have.

B. Deriving a General Formula

Arbitrator pool sizes vary from one hearing location to the next. Thus, this section will derive a general formula for the skewing described in this article. A formula will be developed corresponding to each calculation in A1 through A10 above. To use the formulas, the reader will need to know the sizes of the chair-qualified and non-chair-qualified pools at the hearing location in question – nothing more. For these purposes,

  Let x = number of arbitrators in chair-qualified pool
  Let y = number of arbitrators in non-chair-qualified pool
  Let $P_{described\ event}$ = probability of that event

B1. Average Probability of Chair-Qualified Arbitrator Serving as Chair:

$$P_{chair\text{-}qualified\ arbitrator\ serving\ as\ chair} = \frac{8}{x} \cdot \frac{1}{8} = \frac{1}{x}$$

In plain English, a chair-qualified arbitrator in a pool of x arbitrators has, on average, 8 chances in x of being placed on a chair strike-and-rank list and 1 chance in 8 of being selected as chair. A chair-qualified arbitrator's chances of serving as chair are, of course, independent of and unaffected by any tampering with the selection of the non-chair. And the chair-qualified arbitrator's chances of serving in any capacity in the absence of tampering are equal to that individual's chances of serving as chair because, without tampering, chair is the only available position.

B2. Average Probability of Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Untampered:

$$P_{chair\text{-}qualified\ arbitrator\ serving\ as\ non\text{-}chair\ if\ selection\ untampered} = 0$$

As in A2, absent the tampering inherent in the NASD's proposed rule, a chair-qualified arbitrator would have no chance of serving as a public non-chair.

B3. Average Probability of Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Tampered to Boost Chairs' Odds:

$P_{\text{chair-qualified arbitrator serving as non-chair if selection tampered}} = \dfrac{x-8}{x} \cdot \dfrac{8}{x+y-8} \cdot \dfrac{1}{8} = \dfrac{x-8}{x(x+y-8)}$

A chair-qualified arbitrator in a pool of x has, on average, (x – 8) chances in x of **not** being placed on a chair strike-and-rank list and instead being added into the y-arbitrator non-chair roster to create an (x+y-8)-arbitrator combined roster; 8 chances in (x+y-8) of being placed on a non-chair strike-and-rank list; and 1 chance in 8 of being selected as the non-chair public arbitrator.

Just as in A3, this probability of a chair-qualified arbitrator serving in an additional capacity (*i.e.*, as a public non-chair) represents the *increase* in the chair-qualified arbitrator's probability of serving in any capacity.

B4. Average Probability of Chair-Qualified Arbitrator Serving In Any Capacity if Selection Tampered to Boost Chairs' Odds (see B1 and B3):

$P_{\text{chair-qualified arbitrator serving on panel in any capacity if selection tampered}} =$

$$\dfrac{1}{x} + \dfrac{x-8}{x(x+y-8)} = \dfrac{(x+y-8)}{x(x+y-8)} + \dfrac{x-8}{x(x+y-8)} = \dfrac{2x+y-16}{x(x+y-8)}$$

This is just the sum of B1 and B3 – the average probabilities of serving as the chair and as the public non-chair, respectively.

B5. Average Probability of *Non*-Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Untampered:

$P_{\text{non-chair-qualified arbitrator serving as non-chair if selection untampered}} = \dfrac{8}{y} \cdot \dfrac{1}{8} = \dfrac{1}{y}$

A non-chair-qualified arbitrator in a pool of y has, on average, 8 chances in y of being placed on a non-chair strike-and-rank list and 1 chance in 8 of being selected as non-chair. In the special case where x = y (in other words, where the pools are of equal size) chair-qualified arbitrators and non-chair-qualified arbitrators have, on average, equal chances of being selected as long as the system is untampered.

B6. Average Probability of *Non*-Chair-Qualified Arbitrator Serving as Public Non-Chair if Selection Tampered to Boost Chairs' Odds:

$$P_{\text{non-chair-qualified arbitrator serving as non-chair if selection tampered}} = \frac{8}{(x+y-8)} \cdot \frac{1}{8} = \frac{1}{(x+y-8)}$$

> A non-chair-qualified arbitrator in a combined pool of (x+y-8) has, on average, 8 chances in (x+y-8) of being placed on a non-chair strike-and-rank list and 1 chance in 8 of being selected as non-chair. This is a substantial reduction from the previous 1/y chance that the average non-chair-qualified arbitrator would have of being appointed in the absence of an infusion of chair-qualified arbitrators into the non-chair pool. This is the general case of the calculated numerical reduction seen in A6.

B7. Average Increase in Probability of Chair-Qualified Arbitrator Serving In Any Capacity as a Result of Tampering (see B1 through B4):

$$\text{Increase} = \frac{x-8}{x(x+y-8)}$$

> This is simply the chair-qualified arbitrator's added probability of serving as a non-chair. It therefore is equivalent to B3.

$$\text{Relative Increase} = \frac{x-8}{x(x+y-8)} \div \frac{1}{x} = \frac{x(x-8)}{x(x+y-8)} = \frac{(x-8)}{(x+y-8)}$$

> This is the chair-qualified arbitrator's added probability of serving divided by the chair-qualified arbitrator's initial probability of serving if the system were untampered – *i.e.*, B3 divided by B1. To express it as a percentage, multiply by 100.   This is the general version of the numerical result reached in A7.

B8. Average Decrease in Probability of Non-Chair-Qualified Arbitrator Serving as a Result of Tampering (see B5 and B6):

$$\text{Decrease} = \frac{1}{y} - \frac{1}{(x+y-8)} = \frac{(x+y-8)}{y(x+y-8)} - \frac{y}{y(x+y-8)} = \frac{(x-8)}{y(x+y-8)}$$

This is simply the non-chair-qualified arbitrator's reduction in probability of serving as a non-chair – *i.e.*, B5 minus B6.

$$\text{Relative Decrease} = \frac{(x-8)}{y(x+y-8)} \div \frac{1}{y} = \frac{(x-8)}{y(x+y-8)} \cdot \frac{y}{1} = \frac{(x-8)}{(x+y-8)}$$

This is the reduction in a non-chair's probability of serving divided by the initial probability of serving in an untampered system – *i.e.*, (B5 minus B6) divided by B5. To express it as a percentage decline, multiply by 100. Note that the non-chair-qualified arbitrator's relative decrease equals the chair-qualified arbitrator's relative increase (see B7).

B9. Ratio *Without* Tampering of
- Average Chair-Qualified Arbitrator's Probability of Serving in Any Capacity
to
- Average Non-Chair Qualified Arbitrator's Probability of Serving in Any Capacity
 (see B1 and B5)

$$\text{Ratio} = \frac{1}{x} \div \frac{1}{y} = \frac{1}{x} \cdot \frac{y}{1} = \frac{y}{x}$$

Thus, in the absence of tampering, the chair-qualified arbitrators and non-chair-qualified arbitrators have chances of serving that vary inversely with the sizes of their respective pools. In the special case where they come from pools of equal size, they have equal chances of serving.

B10. Ratio *With* Tampering of
- Average Chair-Qualified Arbitrator's Probability of Serving in Any Capacity
to
- Average Non-Chair Qualified Arbitrator's Probability of Serving in Any Capacity
(see B4 and B6)

$$\text{Ratio} = \frac{2x+y-16}{x(x+y-8)} \div \frac{1}{(x+y-8)} =$$

$$\frac{2x+y-16}{x(x+y-8)} \cdot \frac{(x+y-8)}{1} = \frac{2x+y-16}{x} = \frac{2x}{x} + \frac{y}{x} - \frac{16}{x} = 2 + \frac{y}{x} - \frac{16}{x} = \frac{y}{x} + 2 - \frac{16}{x}$$

This final expression - $\frac{y}{x} + 2 - \frac{16}{x}$ - is particularly helpful to understanding all of this

because it shows that the ***increase*** over the untampered odds (which were y/x, as shown

in B9) ***always*** will be equal to $2 - \frac{16}{x}$. This simple formula can be applied to any

combination of pool sizes to determine the precise effect of the NASD's proposed skewing.

Thus, for example, in a situation where the chair-qualified arbitrators and the non-chair-
qualified arbitrators have an equal chance of serving in an untampered system (that is,
where the pools are of equal size and y/x therefore is equal to 1) and the pool size is 80,
the chair-qualified arbitrators benefiting from the NASD's proposed rule will have **2.8 times**
the chance of serving that the non-chair-qualified arbitrators will have – that is, 1 + 2 –
16/80 = 3 – 0.2 = 2.8.

To take an example from the table that appeared early in this article, suppose there are 50
chair-qualified arbitrators and 100 non-chair-qualified arbitrators. In an untampered
system, the chair-qualified arbitrators would be twice as likely to serve as the non-chair-
qualified arbitrators, because there are half as many of them. But with the NASD's
proposed tampering, the chair-qualified arbitrators will have **3.68 times** the likelihood of
serving that the non-chair-qualified arbitrators will have – that is, 2 + 2 – 16/50 = 4 – 0.32 =
3.68.

Conclusion

The NASD's proposed inclusion of chair-qualified arbitrators in the non-chair-qualified arbitrators' pool for public non-chair list selection purposes may look innocuous at first blush. But it is far from innocuous when its real effects are quantified. The devil is in the details. One can only hope that the SEC will display an understanding of the mathematics of list selection by denying the NASD's request.