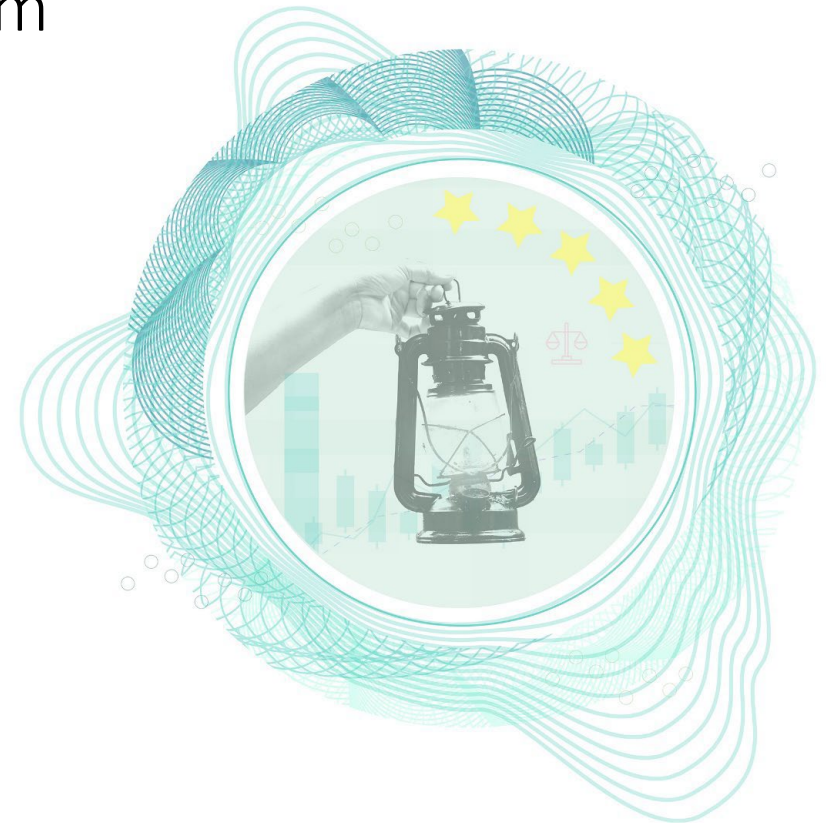




Conversation with the Mutual Fund Directors Forum

December 8, 2022

Finding new paths forward: A summary of the results of the 2022 Deloitte Fair Valuation Pricing Survey – 20th edition



Paul Kraft, Partner, Investment Management Marketplace Eminence Leader, Deloitte & Touche LLP

Tom Wines, Managing Director, Deloitte & Touche LLP

Pedro Beato, Senior Manager, Deloitte & Touche LLP

Meeting with you today



Paul Kraft
Partner
Investment Management
Marketplace Eminence
Leader
Deloitte & Touche LLP

Paul is a Partner in Deloitte's Financial Services Industries practice, Investment Management Marketplace Eminence Leader and has over 30 years of experience providing audit and related services to some of Deloitte's largest asset management, insurance and bank clients.

His previous firm roles have included US mutual funds and investment advisers practice leader, partner in charge of the financial services industry practice for New England and deputy partner of the National Asset Management Practice. Paul has led Deloitte's annual Fair Valuation Survey since inception and is a frequent speaker and writer on the topic of fair valuation as well as other financial services and governance topics.

Before joining Deloitte & Touche, Paul spent over two years as assistant chief accountant in the SEC's Division of Investment Management in Washington, D.C.



Tom Wines
Managing Director
Deloitte & Touche LLP

Tom is a Managing Director in the New England Financial Services Industry Practice and has more than 18 years of experience. He has specialized in the financial services industry throughout his career, with a primary focus on investment management clients. His expertise includes valuation of investments within mutual funds. This is Tom's sixth year assisting on the Fair Valuation Survey.

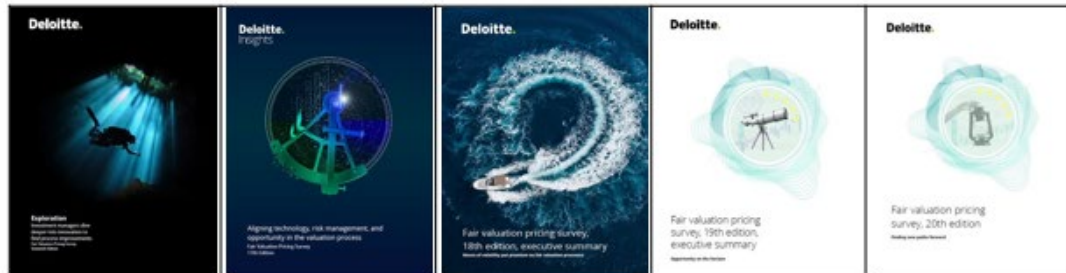
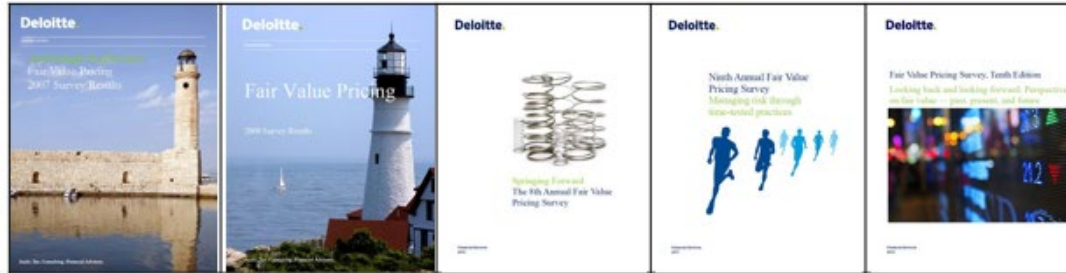
Before joining Deloitte, Tom spent six years within the investment management industry at a Boston area fund administrator.



Pedro Beato
Senior Manager
Deloitte & Touche LLP

Pedro has 16 years of experience in the investment management industry serving private and public investment companies, including mutual funds, collective investment trusts, and alternative investment funds. He has extensive experience overseeing and executing large audit engagements and managing transitions.

Pedro also spent two years in Deloitte's national office as a member of the internal audit inspections group, with a focus on investment management engagements.



Today's Agenda

Survey Metrics

Board Reporting

Risk Assessment

Pricing Vendors and Methodology

Technology

Roles and Responsibilities

Security-specific Observations

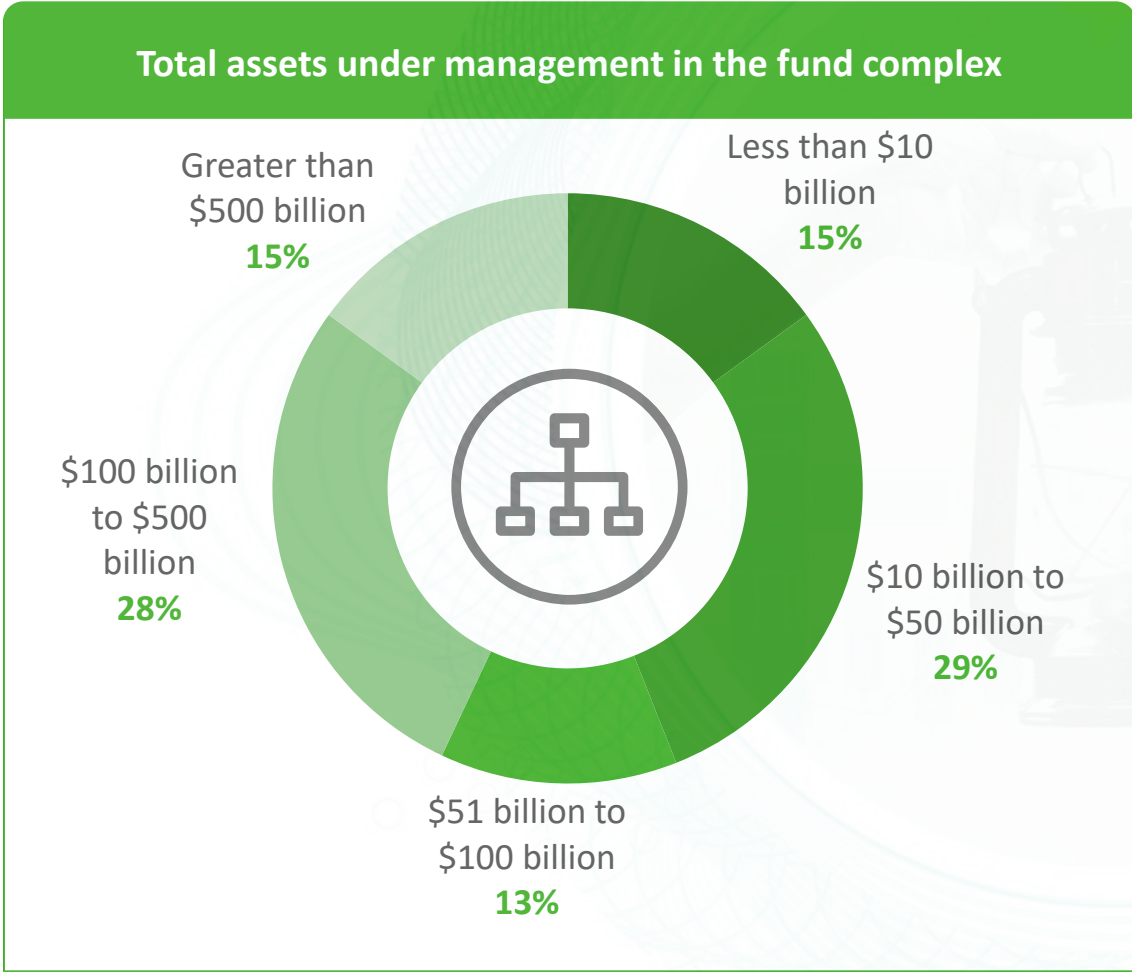
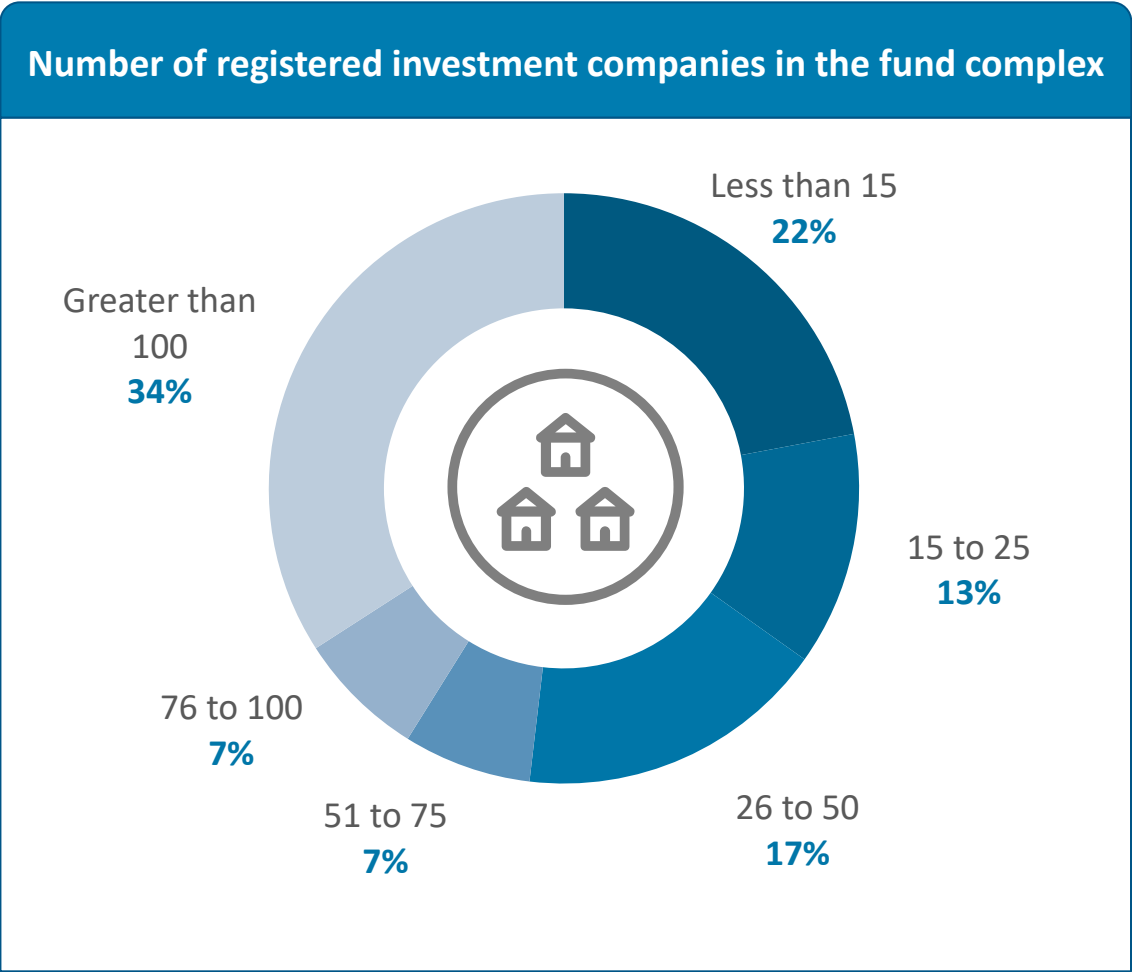
Other Findings

Additional forward thoughts



FV Survey Metrics

90 fund groups participated in this year's survey. The survey was conducted in the summer of 2022 with results published on September 17, 2022.



FV Survey Overview

Purpose

- *Determine how survey practices, policies, and procedures compare to other fund groups in the industry*
- *Identify emerging, maturing and industry trends in the valuation operating model*

2022 Fair Value Survey topics

- Valuation governance
- Risk assessment
- General policies and procedures
- Technology
- Roles and responsibilities
- Pricing sources
- Interactions with pricing vendors
- Specific fair value considerations by asset type
- Foreign currency exchange rates
- ASC 820 considerations
- SEC examinations
- Rule 2a-5



What Did the **FV Survey Results** Tell Us?

Major themes in the 20th edition of the FV survey

- Compliance with Rule 2a-5 dominated the agenda
 - Rule 2a-5 did not reduce divergence in practices amongst fund groups; in some instances, it added to it.
 - Some deviation between fund groups of different sizes exist
 - Mixed practice exists relative to conforming the fair value practices, policies, and procedures of 1940 Act products to those of separate accounts and non-1940 Act products
- Board oversight evolves under Rule 2a-5
- Rule 2a-5 brought about a new approach to valuation risk assessments
- Procedural changes surface relative to testing methodologies and overseeing pricing vendors
- Rule 2a-5 serves as a catalyst for continued technology advancement

Other observations

- Change in roles and responsibilities occurred as a result of Rule 2a-5
- Minor changes in considerations relating to specific types of securities



Board Reporting

Impact of Rule 2a-5 on Board Reporting

- 51% of FV survey participants indicated that their boards will receive back-testing related to Level 3 investments, compared to just 36% last year and 29% reporting such in the FV survey two years ago
- 66% of current FV survey participants had previously concluded that boards needed to formally ratify investments, but only 27% of those FV survey participants are continuing the practice.
- 89% of FV survey participants indicated that they will perform testing throughout the year, but there is divergence as to when that should be reported, with 38% indicating that they will still report results throughout the year and 51% indicating that they will just do so annually.

Areas in which the board will receive more information	Percentage reporting increase
Back-testing results	57%
Price challenge results	35%
Calibration results	14%
Use of secondary price sources instead of primary sources	14%
Internally fair-valued securities	11%
Use of internal modeling as opposed to primary source	8%

Impact of Rule 2a-5 on Board Reporting

- 47% indicated that the Rule is impacting their approach to dashboard reporting.
- 74% of FV survey participants using summarized dashboard reporting indicated that the number of price challenges is tracked as part of the risk dashboard provided to the board. This is up from 58% last year and is now the 3rd most common KVI provided to boards as a part of a risk dashboard.
- 15% of FV survey participants, compared with 30% last year, reported that boards are getting all of the full details to support summarized valuation reporting, meaning that 85% indicated that, at least in some instances, summarized reporting was sufficient for the boards to conduct their oversight.

KVIs	Percentage of those who generate dashboards for boards
Back-testing results (trades) – Number and/or percentage of portfolio value	86%
Number of price challenges	74%
Back-testing results (foreign fair value factors) – Number and/or percentage of portfolio value	71%
Price challenges up in price vs. down in price	45%
Valuation source change	24%

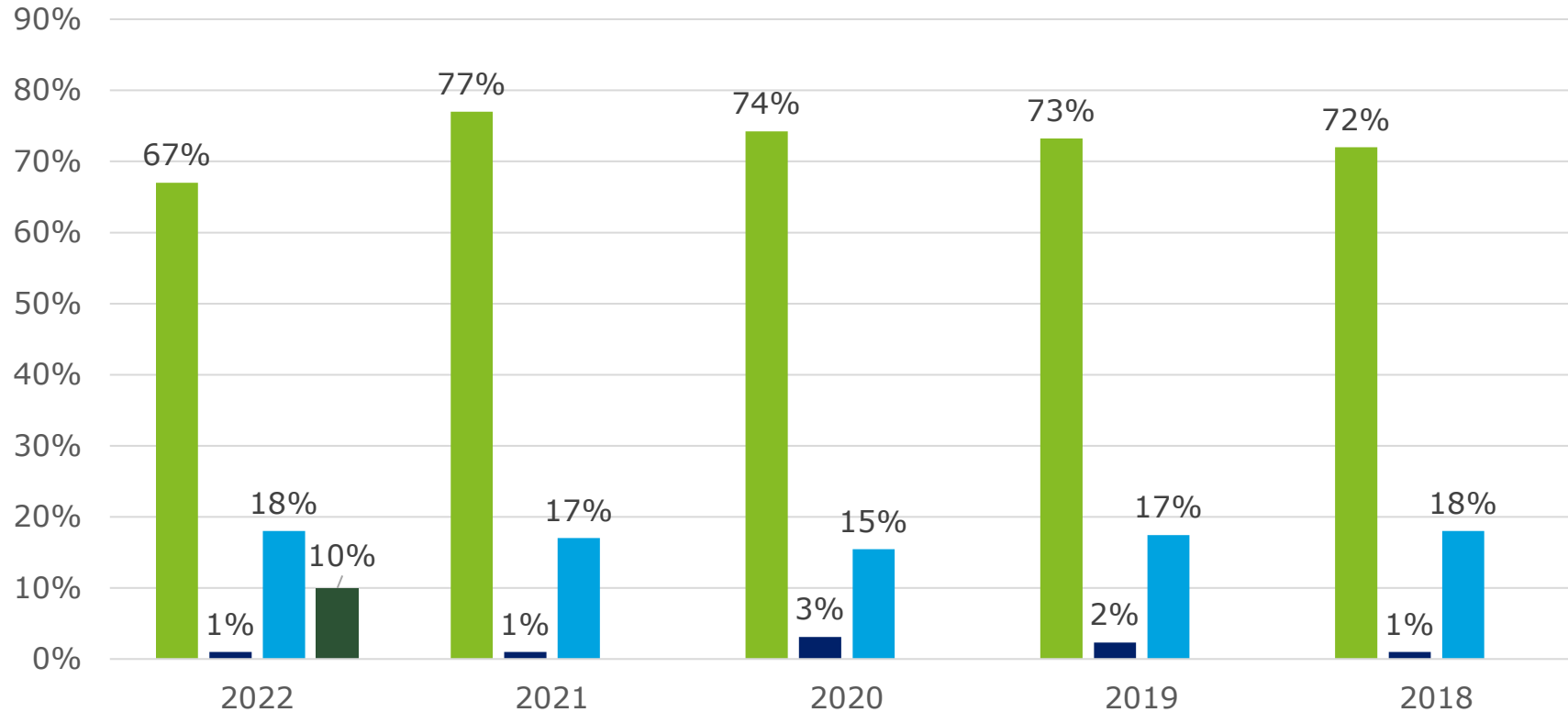
How **Materiality** is Defined for Reporting to the Board

- Practices vary on how fund groups are determining what is material for purposes of board reporting.
- 16% have established or are establishing metrics to help the board evaluate the adequacy of valuation resources.

	Penny per share	Reprocessing threshold	Reasonable person standard	Other
Matters materially affecting the valuation of an investment (Prompt notification requirement)	55%	24%	7%	14%
Material changes to, or material deviations from, the fair value methodologies (Quarterly reporting requirement)	55%	16%	11%	18%

Governance – the Basics

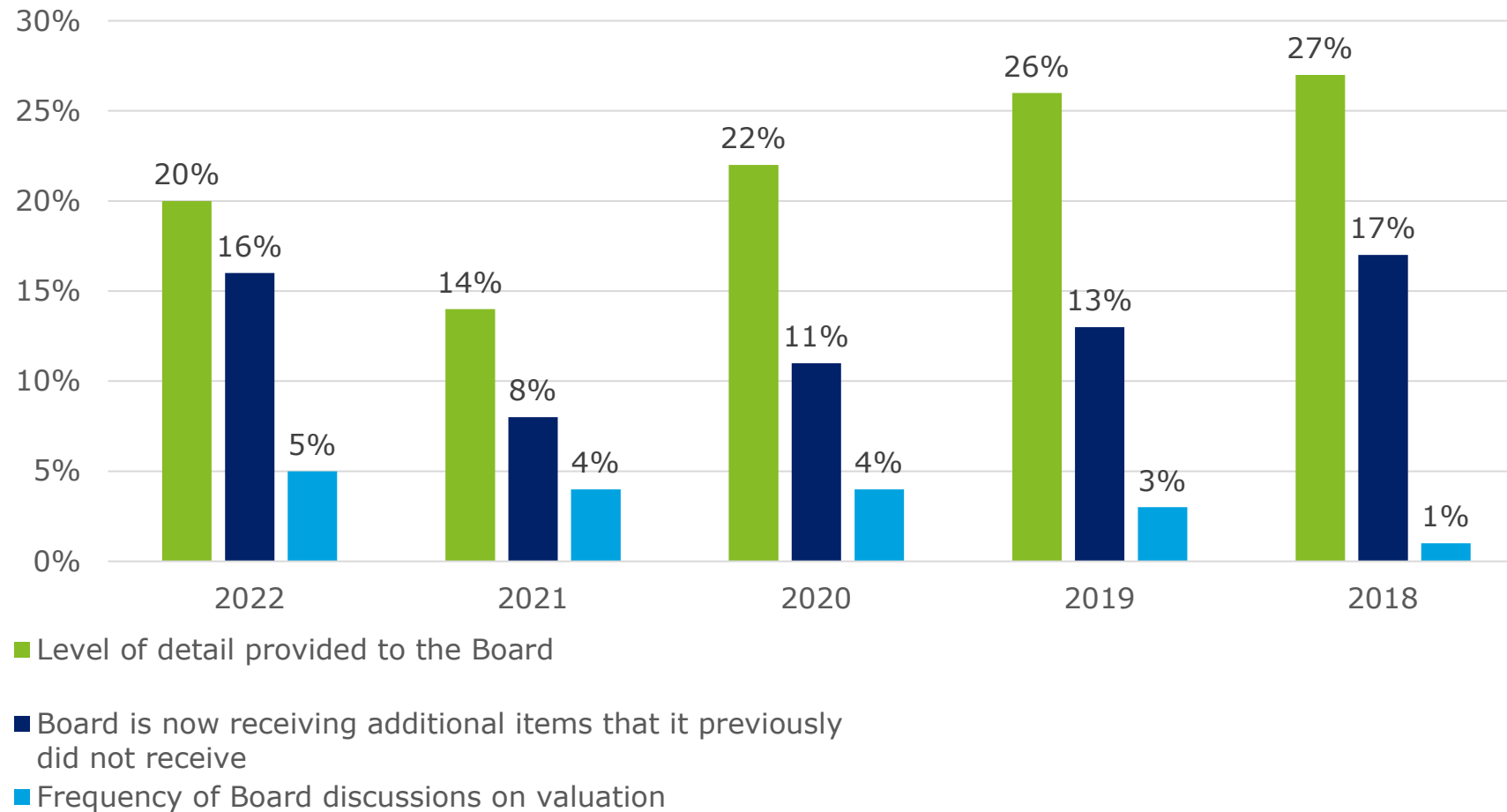
Board's Valuation Governance Model



- The Board has delegated responsibility for overseeing valuation matters to a separate Board committee (Valuation Committee, Audit Committee, Risk Committee, etc.), subject to the overall Board's oversight
- The Board has not delegated responsibility for overseeing valuation matters to a separate committee; however, one or more Board members have been designated to focus on valuation matters and report back to the Board
- The full Board oversees all valuation matters without using a separate committee
- ★ ■ Current valuation model is changing under Rule 2a-5

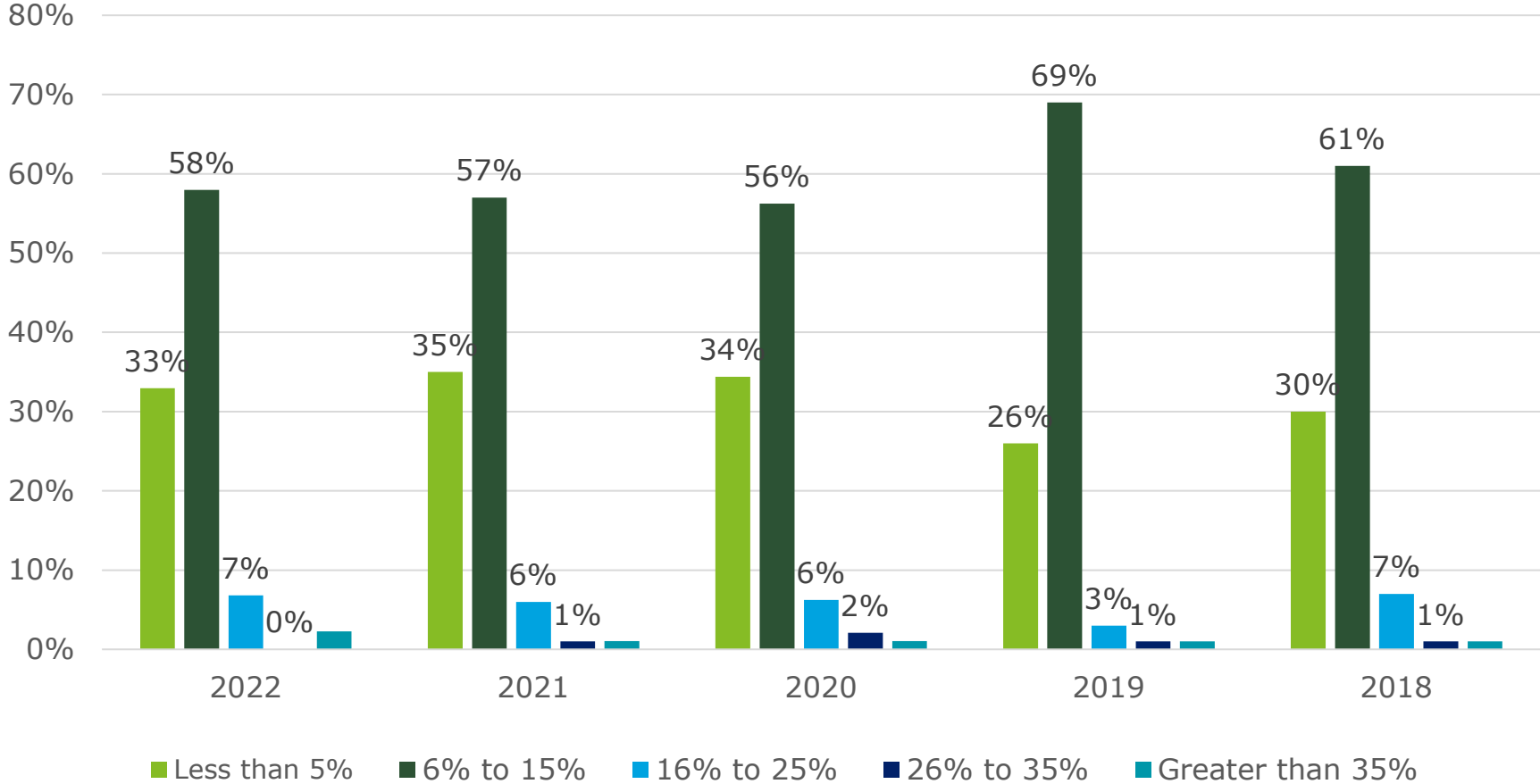
Governance – the Basics

Changes relative to Board Activity and Reporting



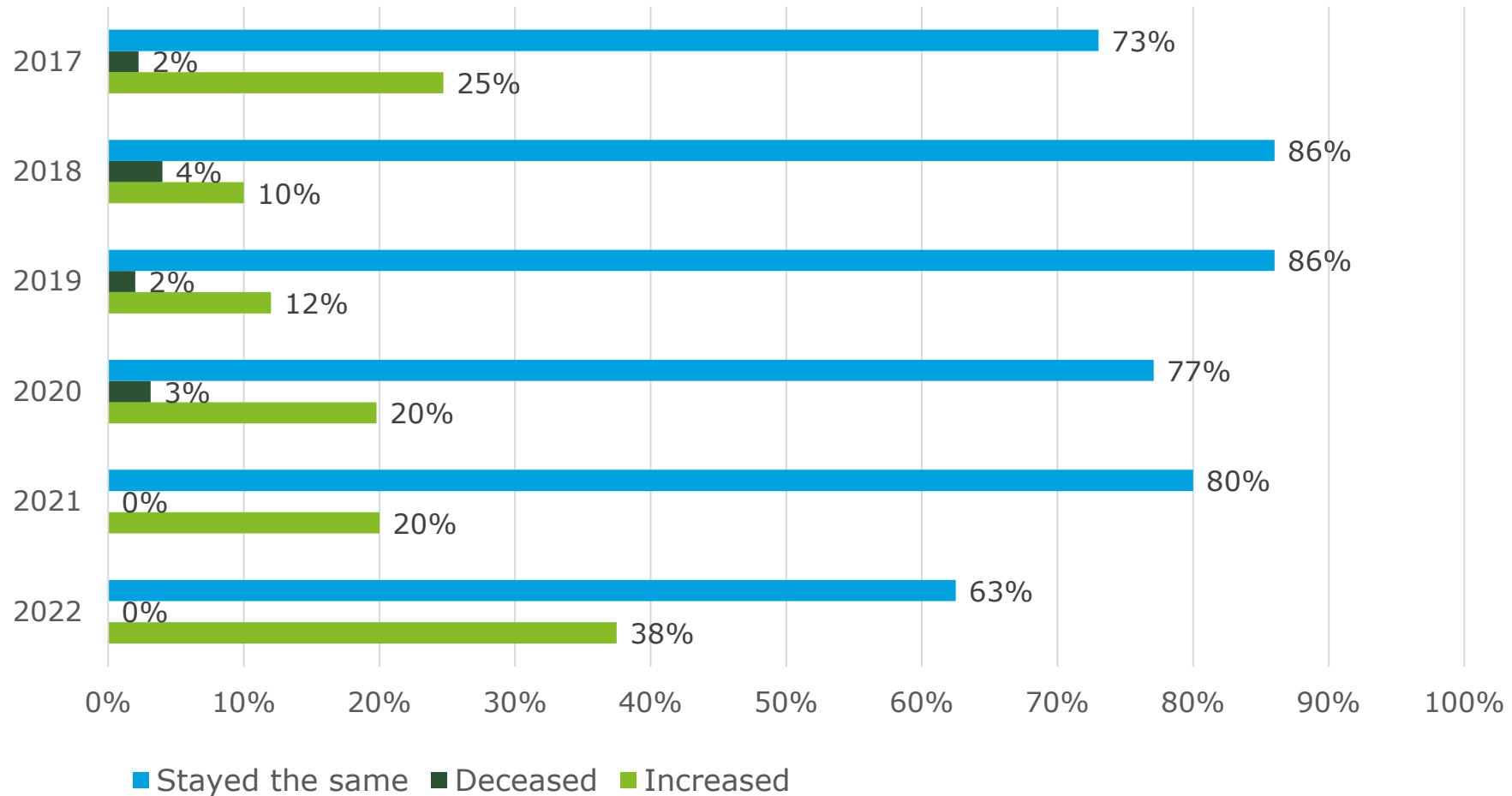
Governance – the Basics

Board agenda time spent on valuation matters



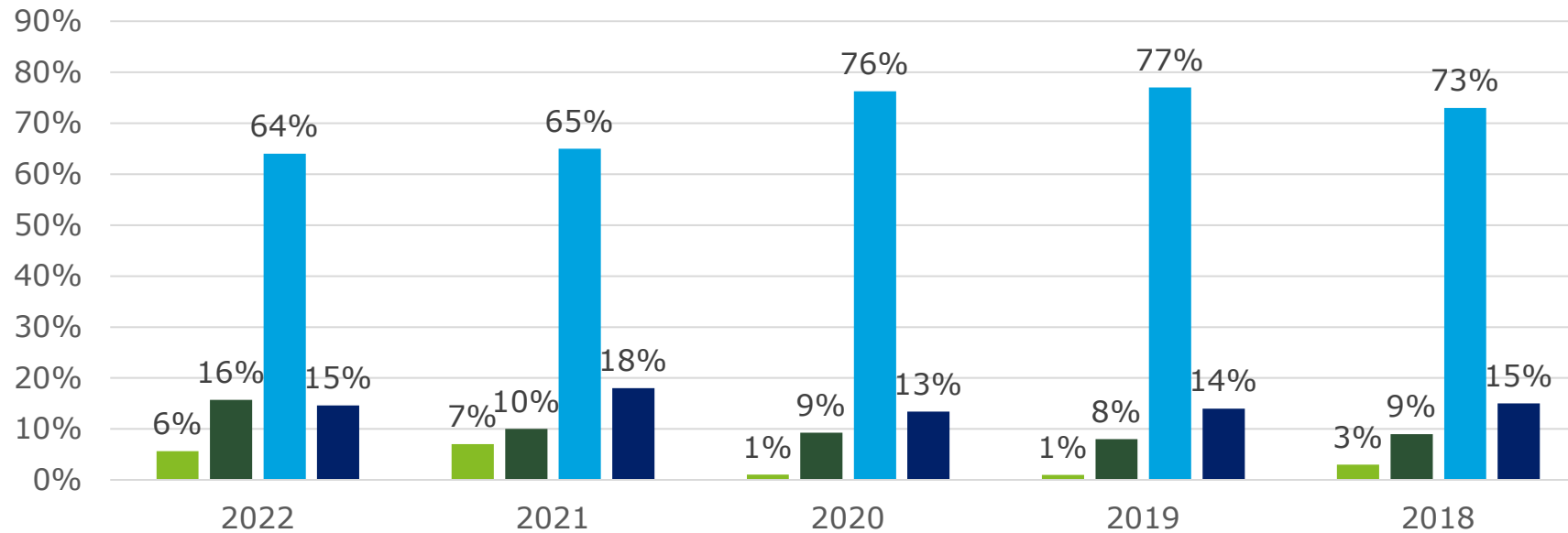
Governance – the Basics

Change in Board agenda time spent on valuation matters



Governance – the Basics

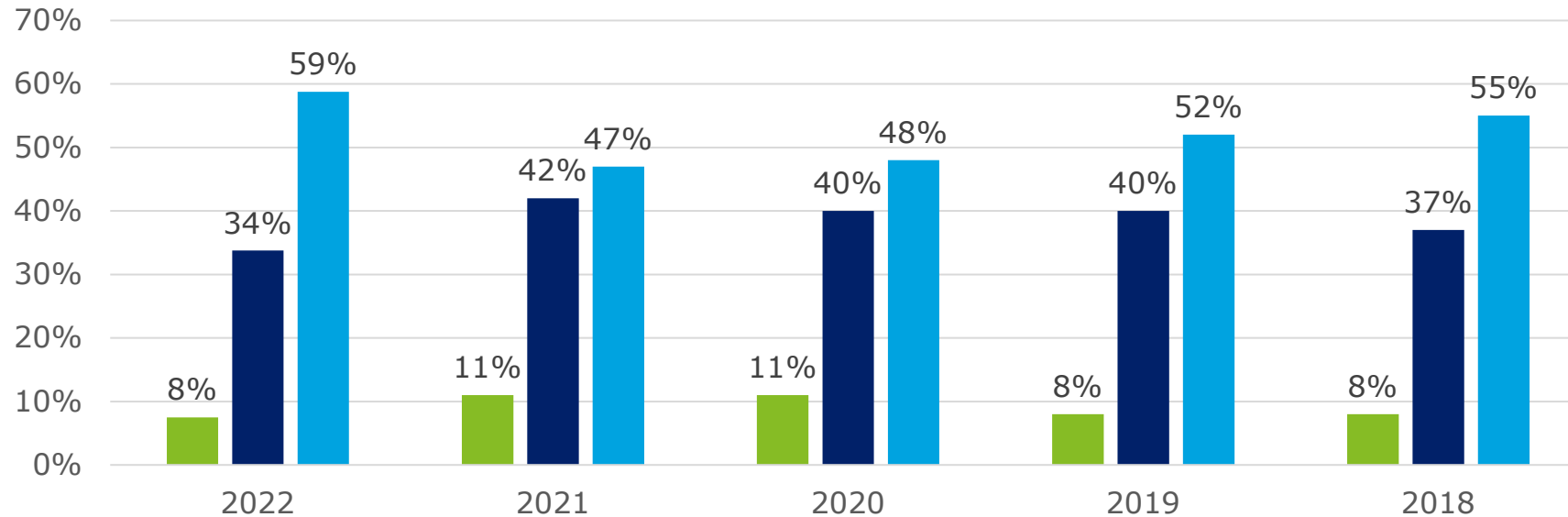
Visiting Pricing Vendors (Virtually in 2021 & 2022)



- Yes, at least one board member **attends every** pricing vendor site visit/virtual visit
- Yes, at least one board member **attends at least one** (but not every) pricing vendor site visit/virtual visit
- No, at least one board member **does not attend**
- N/A, we do not visit pricing vendors

Governance – Key Tools

Tool #1 – Proactive Board's "real-time" involvement



- Valuation policies and procedures explicitly identify certain circumstances in which one or more non-interested Board members must be involved in the evaluation of the pricing of one or more holdings prior to use of such valuation
- Valuation policies and procedures explicitly identify certain circumstances in which one or more non-interested Board members must be notified (within a few days) of the valuation of one or more holdings (Please note that this represents notification and not active participation)
- Valuation policies and procedures do not explicitly identify certain circumstances in which non-interested Board members must be notified or must be involved (Please select this even if one or more non-interested Board members may be involved on a real-time basis at management's discretion or upon an impromptu request from one or more Board members)

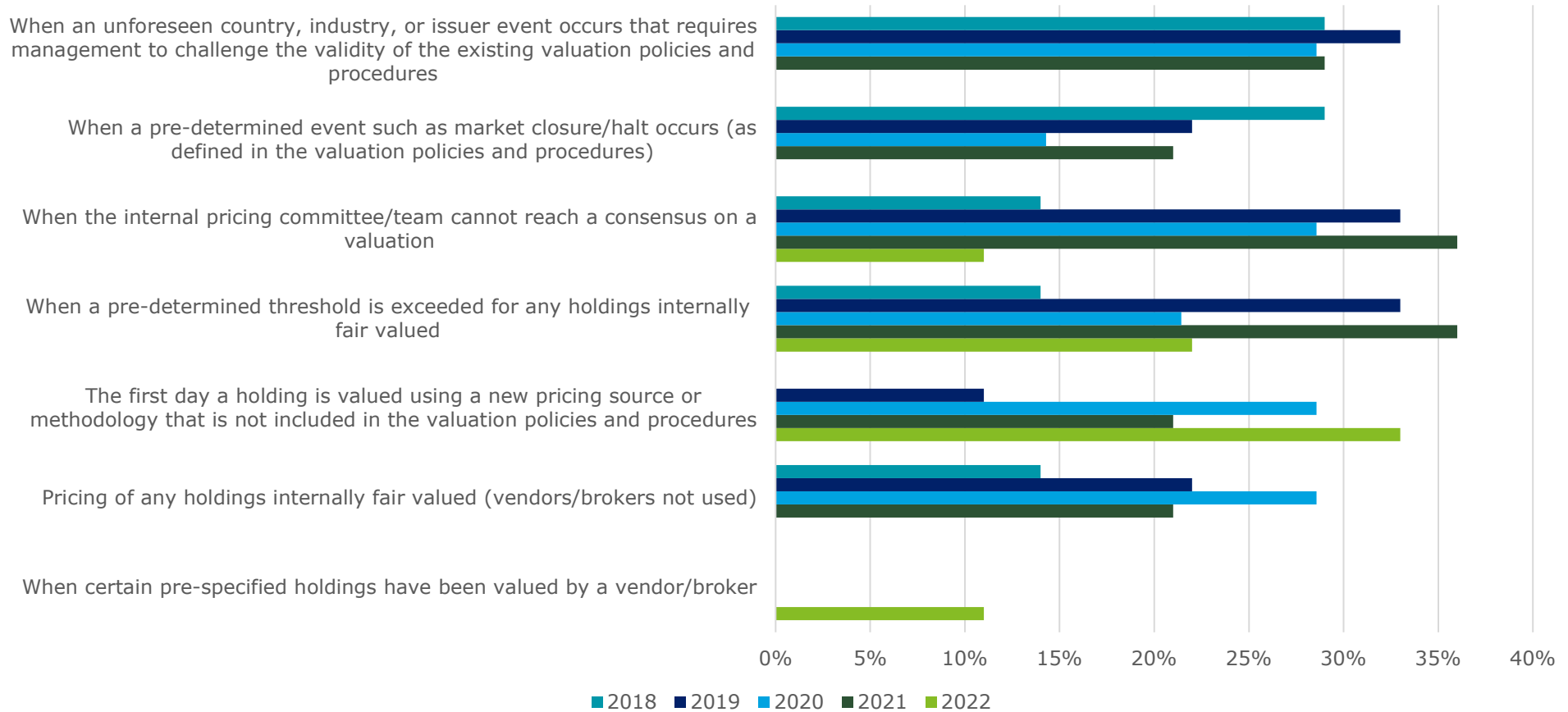
The Consideration of Active Board Oversight – Governance – Key Tools

Tool #1 – Proactive Board's "real-time" involvement	ALL	> \$100B AUM
Valuation policies and procedures explicitly identify certain circumstances in which one or more non-interested Board members <u>must be involved</u> in the evaluation of the pricing of one or more holdings <u>prior to use</u> of such valuation	8%	5%
Valuation policies and procedures explicitly identify certain circumstances in which one or more non-interested Board members must be <u>notified (within a few days)</u> of the valuation of one or more holdings (Please note that this represents notification and not active participation)	34%	35%
Valuation policies and procedures <u>do not explicitly identify</u> certain circumstances in which non-interested Board members must be notified or must be involved (Please select this even if one or more non-interested Board members may be involved on a real-time basis at management's discretion or upon an impromptu request from one or more Board members)	59%	60%

Governance – Key Tools

Tool #1 – Proactive Board's "real-time" involvement

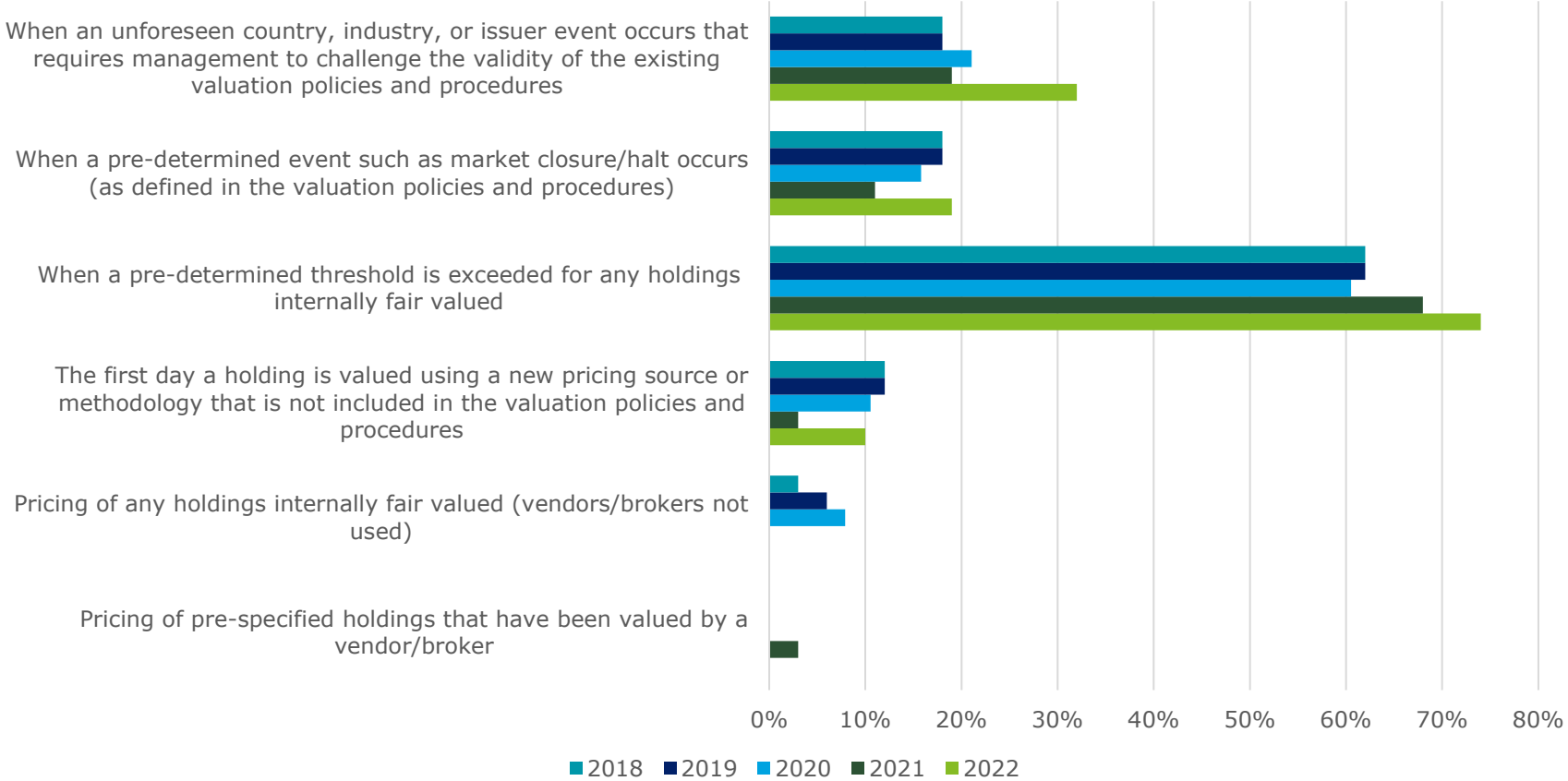
Reasons Why Involvement Is Required



Governance – Key Tools

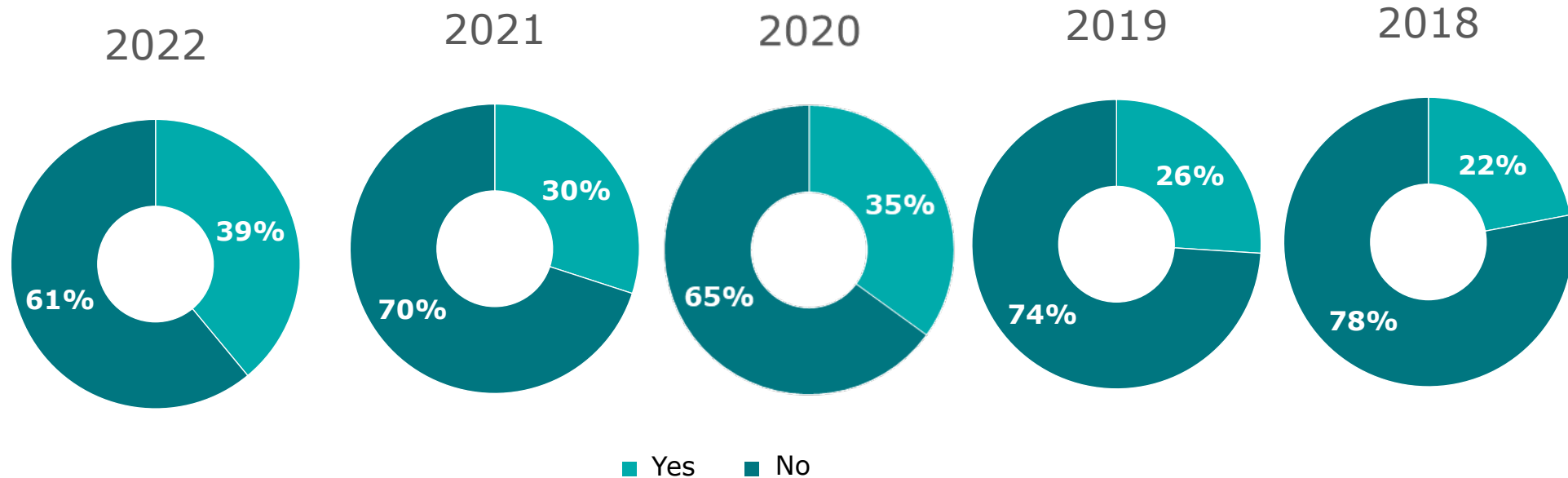
Tool #1 – Proactive Board's "real-time" involvement

Reasons Why Notification Is Required



Governance – Key Tools

Tool #2 – Ad Hoc Valuation Discussions: Did they occur between meetings?



Common issues that prompted an ad hoc discussion include:

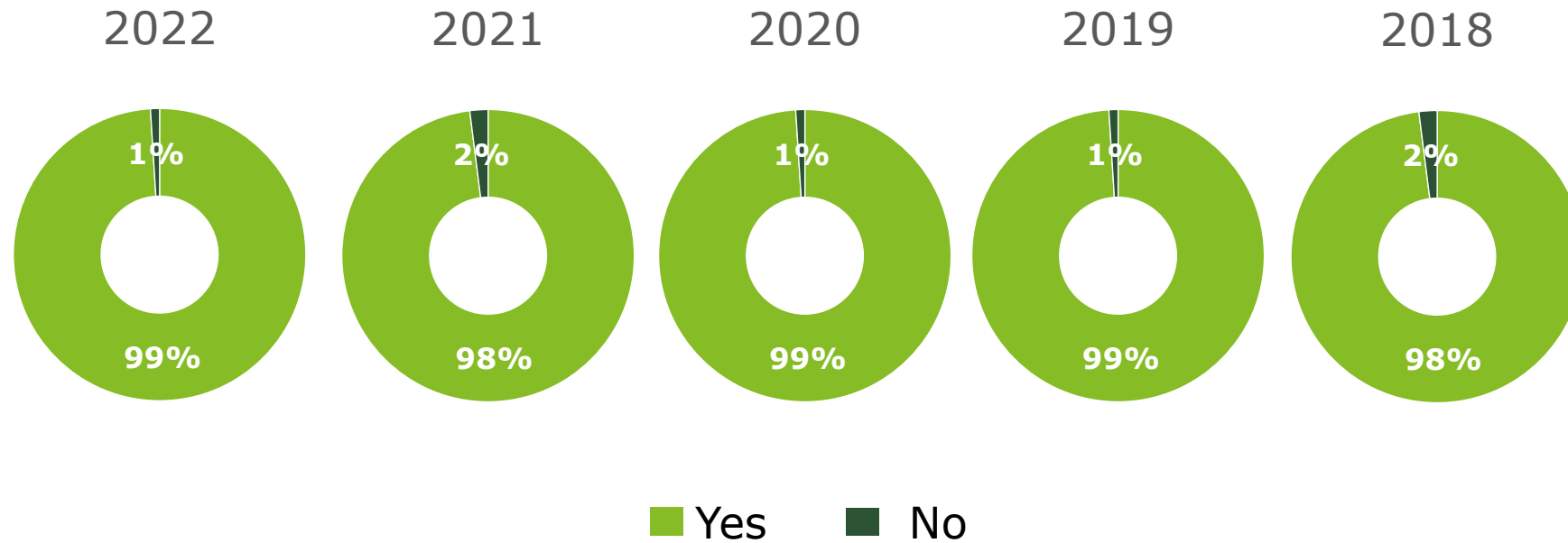
- Invasion of Ukraine
- Private equity positions
- Market closures

The Consideration of Active Board Oversight – Governance – Key Tools – by AUM

Tool #2 – Ad Hoc Valuation Discussions: Did they occur between meetings?	ALL	>\$100 AUM
Yes	39%	54%
No	61%	46%

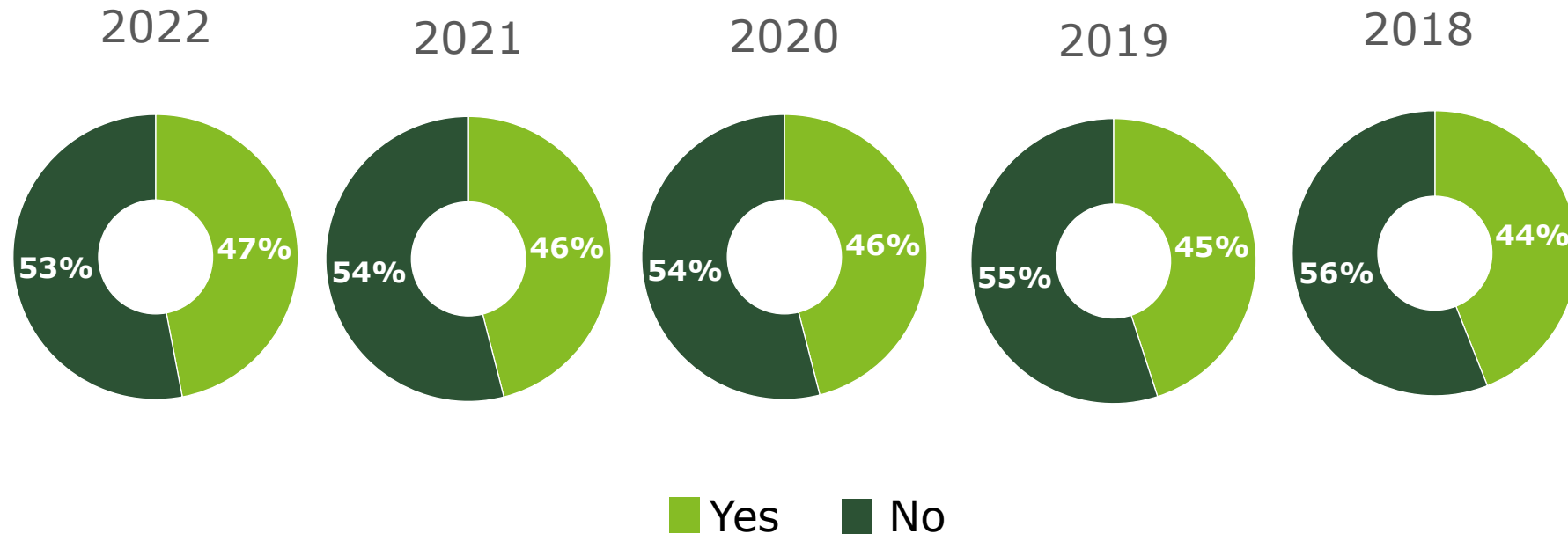
Governance – Key Tools

Tool #3 – Valuation Risk Reporting: Does the Board receive summarized reporting on valuation?



Governance – Key Tools

Tool #3 – Valuation Risk Reporting: Does the Board receive KVIs in a dashboard format?

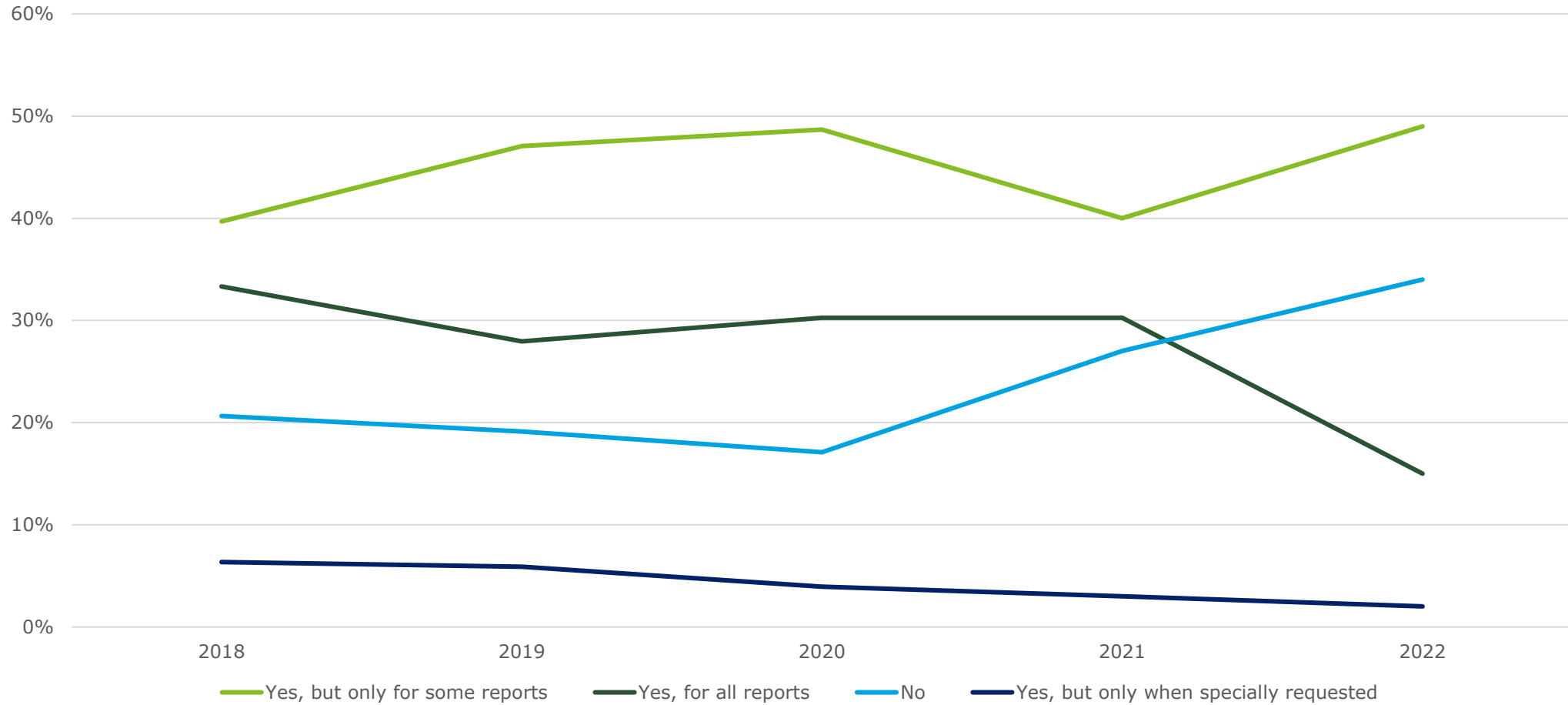


The Consideration of Active Board Oversight – Governance – Key Tools – by AUM

Tool #3 – Valuation Risk Reporting: Does the Board receive KVIs in a dashboard format?	ALL	>\$100 AUM
Yes	47%	55%
No	53%	45%

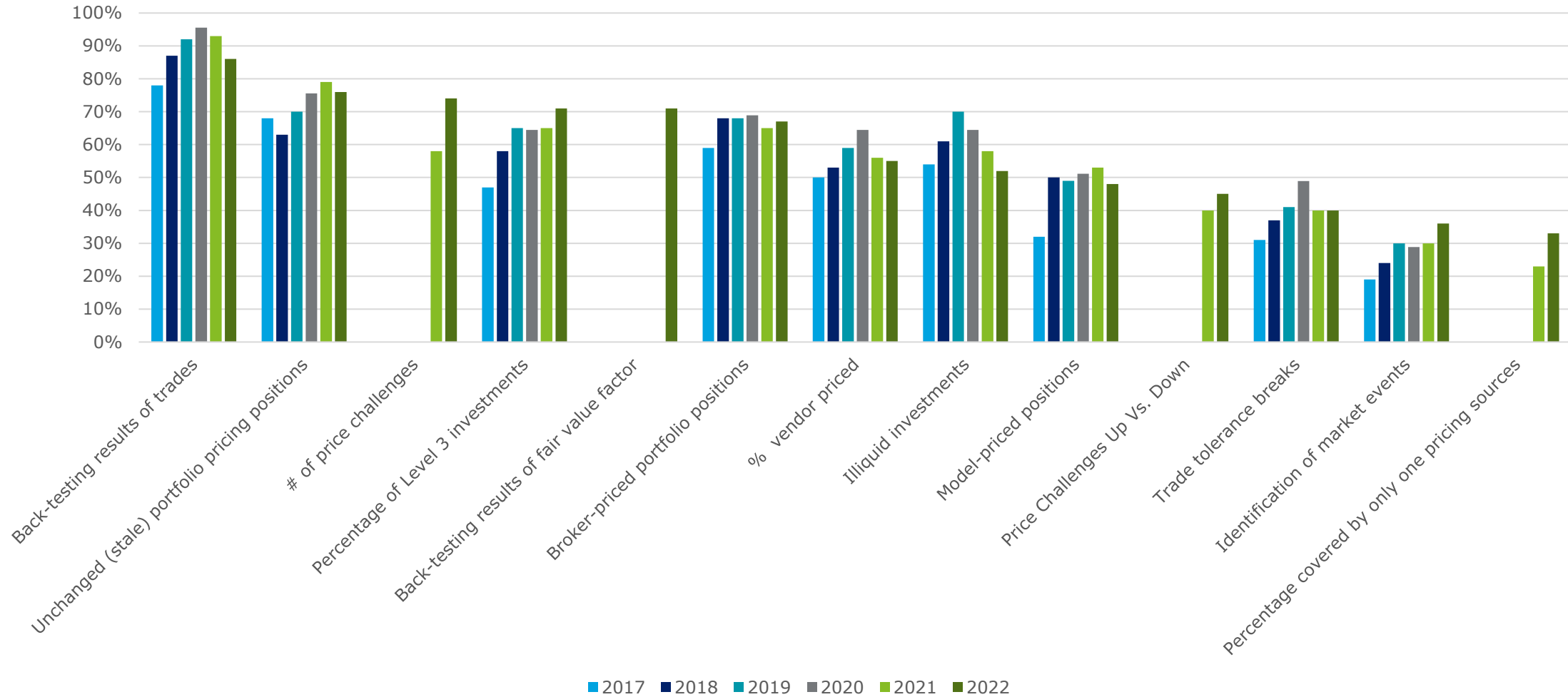
Governance – Key Tools

Tool #3 – Valuation Risk Reporting: Does the Board also receive detailed data supporting the summarized reports?



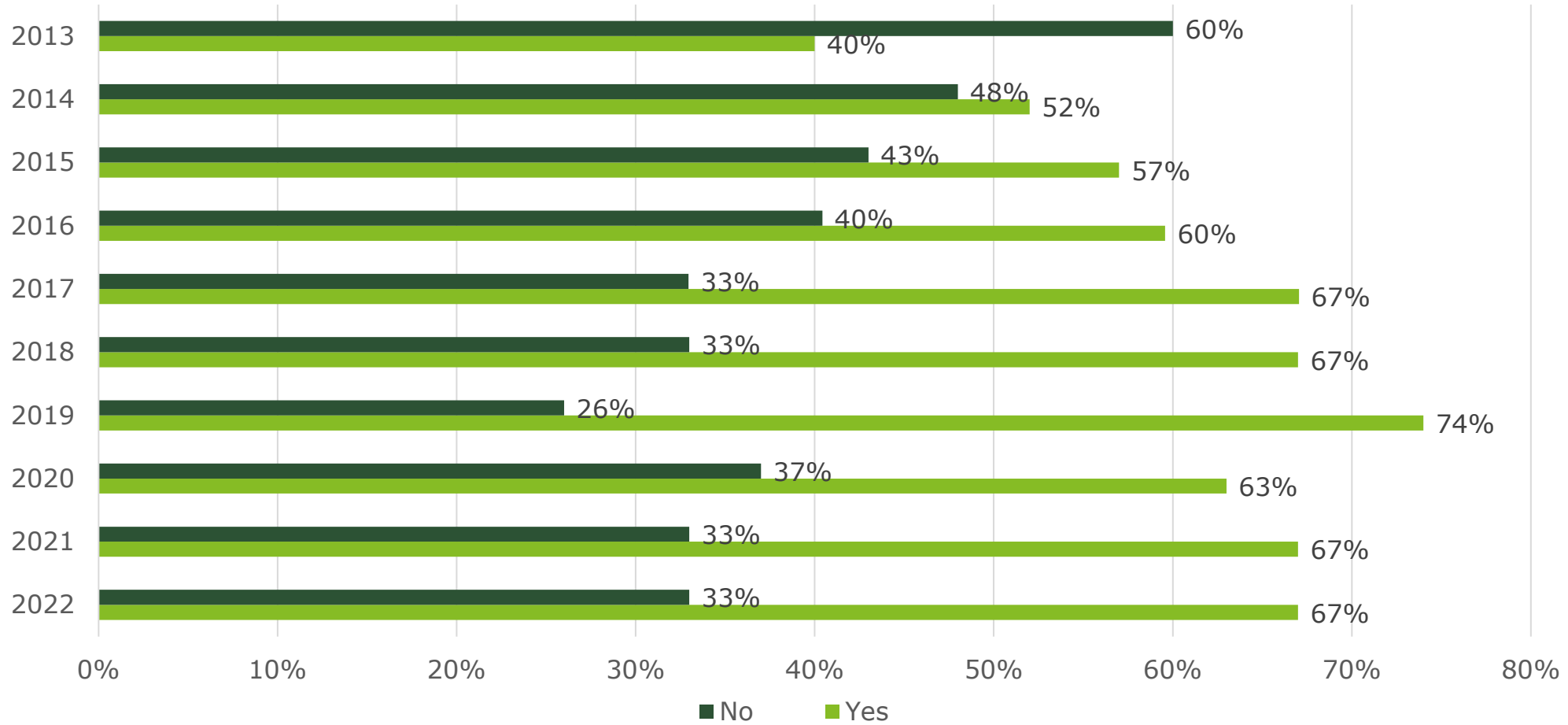
Governance – Key Tools

Tool #3 – Valuation Risk Reporting: KVIs & Dashboards



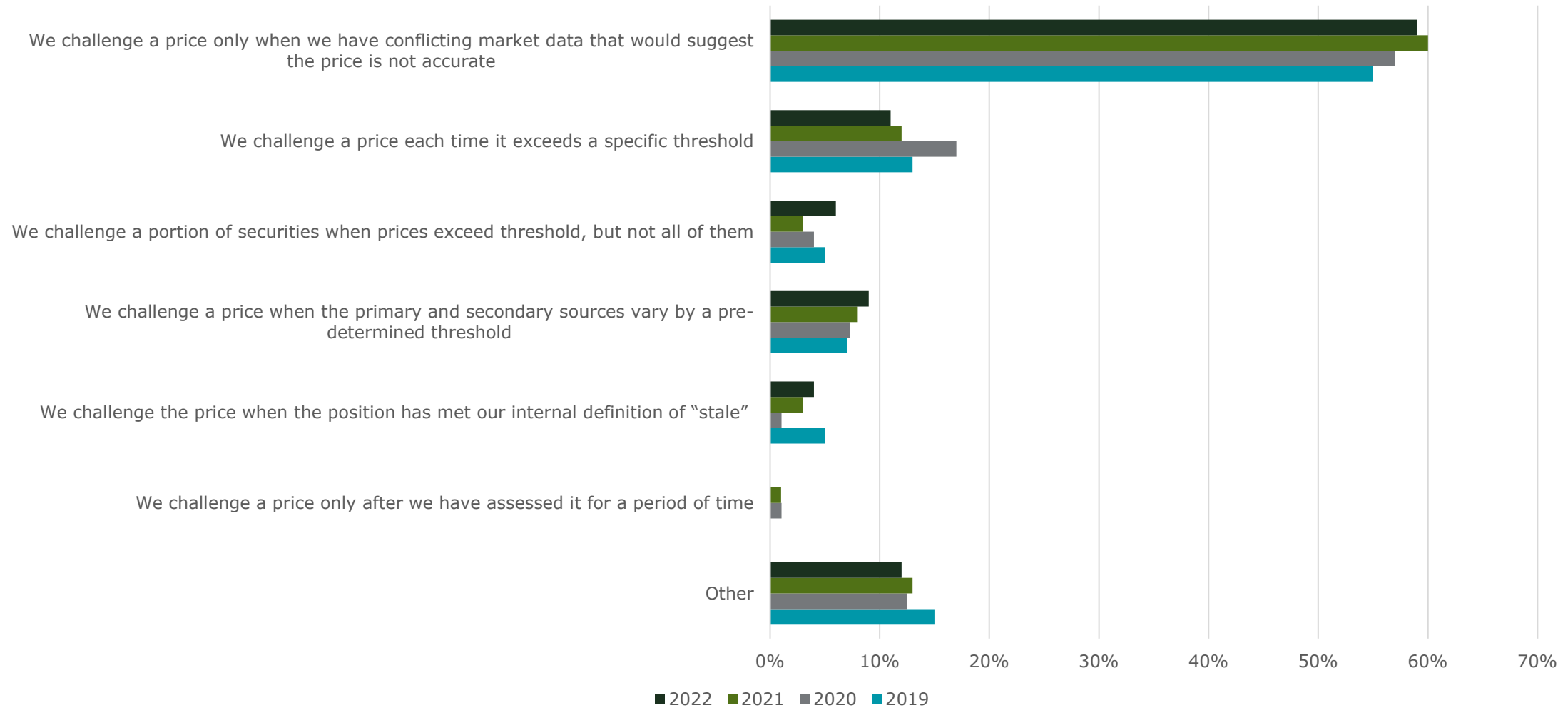
Governance – Key Tools

Tool #3 – Valuation Risk Reporting: Do boards review information on price Challenges?



Governance – Key Tools

Tool #3 – Valuation Risk Reporting: Price Challenge Review



Risk Assessment

Evolution of Risk Assessment

Identification of risks

- 52% of FV survey participants have identified five or fewer high-level/general risks while the remainder of participants have specified risks in greater detail.
- Most FV survey participants focused only on the risks identified by the SEC in its adopting release of the Rule. Only 15% indicated that they identified risks in addition to the examples provided by the SEC.
- As for where those risks are documented, 46% of FV survey participants have included the identified risks within the valuation policies and procedures, while others have housed risk documentation elsewhere.

Evolution of process relative to valuation

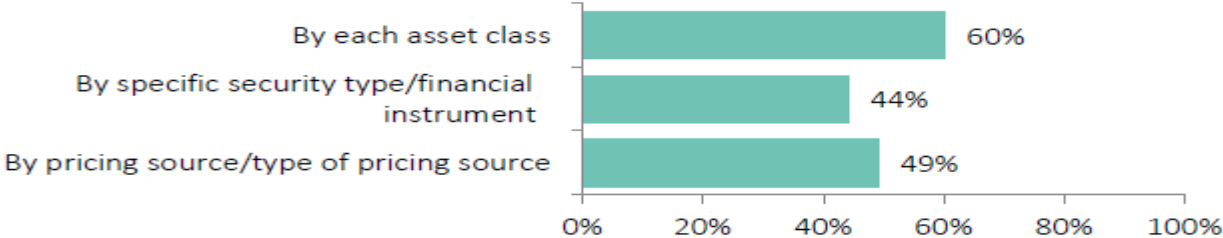
- More than 75% of FV survey participants indicated that their valuation risk assessment has some sort of risk rating (29%), heat map format (18%), numerical scoring (10%), or combination of the above (20%).
- 43% of FV survey participants indicated that they have identified and mapped procedures to the identified risks.



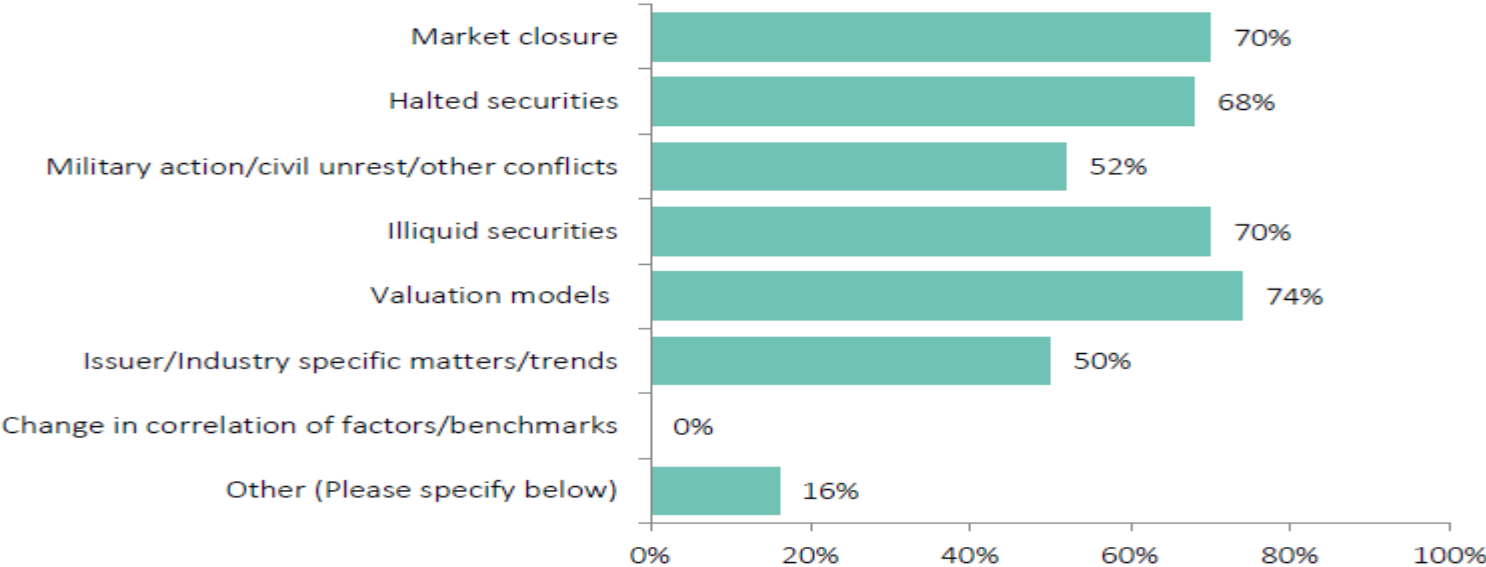
Evolution of Risk Assessment



In identifying risks, please select all of the categories of risk that you have documented or plan to document.



In identifying risks, please select all of the following areas where you have identified risks.



Pricing Vendors and Methodologies

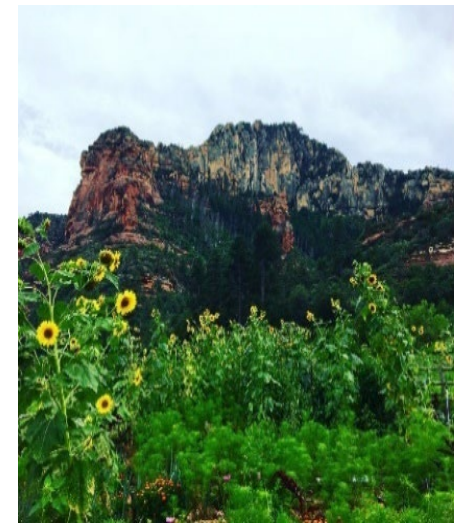
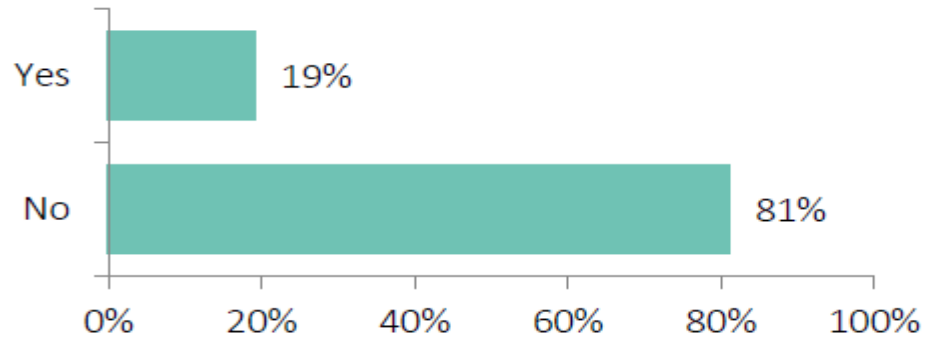
Impact on Pricing Sources and Testing

- 19% of FV survey participants have added new procedures to test valuation methodologies.
 - Fund groups with more than \$100 billion were more likely to have implemented more procedures compared to fund groups smaller than that (32% compared to 8%).
- 75%, as compared to 57% in the prior year, indicated that they perform such visits annually for all pricing vendors that they use as primary pricing sources
- 51% reported that they perform due diligence visits of secondary pricing vendors annually, compared with 35% noting such last year.
- A very slight percentage of FV survey participants (5%) changed their process for evaluating fourth parties.

Activity	Percentage reporting change
Increased focus on vendor documentation of back-testing performed	60%
Developed standard vendor due diligence questionnaire to be used for primary, secondary, and tertiary vendors	30%
Identified specific risks (excluding conflicts of interest) relative to the pricing vendors	27%
More frequent primary vendor due diligence meetings (e.g., moved to quarterly from annual)	18%
Identified one or more conflicts of interest relative to the pricing vendors	17%
More frequent secondary/tertiary vendor due diligence meetings (e.g., moved to annual from ad hoc)	12%

Methodology Testing at Fund Groups

For testing fair value methodologies, have you added new tests?



What's in the Other?:

- Most cited the addition of **internal back-testing**,
- We plan to increase **the frequency/volume of deep dives and price challenges**.
- We believe that we already having adequate testing in place but expect to continue to **enhance** testing by **obtaining more granular data through technology** enhancements.
- Daily **second sourcing of fixed-income securities** through Tableau.
- Choosing a **sample set of securities for each asset class** and performing **deep dives** and comparing responses to the vendor methodologies.

Methodology Testing at Fund Groups



What are you doing in order to satisfy the Rule 2a-5 requirement to understanding pricing vendor valuation methodologies?

Obtaining methodology documents, as well as reviewing the vendor methodologies for a sample set of securities	57%
Obtaining methodology documents and reviewing the vendor methodologies for your full population of securities	40%
Other	3%

What’s in the Other?:

- We intend to take a more **frequent, prescriptive approach to submitting deep dives for sample sets** of securities and we will also **review methodologies via deep dives** during the **quarterly checkpoint** meetings we intend to implement (in addition to annual due diligence meetings).
- Our **daily review processes test the vendor methodologies at a security level**. When we review **vendor methodology documents**, we ensure they **cover** all of our security types in a **more general sense**.
- We created a vendor methodology matrix. Monthly **second source testing** provides testing of methodologies across vendors.
- **Challenges** and **deep dives** are expected to be important parts of methodology reviews.

Technology

Rule 2a-5's Impact on Technology

- 65% of FV survey participants indicated that they made technological advancements in at least some area relative to valuation. 28% of FV survey participants indicated that some of these changes were directly the result of Rule 2a-5.

Area of technology where change occurred	CY Survey	PY Survey
Excel tools	36%	31%
Data visualization	22%	9%
Data analytics	21%	15%
Workflow management tools	19%	11%
Data management/data lake for valuation date	16%	10%
Robotics process automation (RPA)	10%	11%

Changes in Technology

- Most of the technology-related changes seem to have been made by FV survey participants who previously already used these technologies for other uses in their valuation processes.

Area of technology	% Using the technology 20th Edition of the FV survey	% Using the technology 19th Edition of the FV survey	% Using the technology 18th Edition of the FV survey
Excel tools	97%	93%	83%
Data analytics	38%	36%	34%
Data management/data lake	34%	34%	23%
Workflow management tools	29%	35%	36%
Data visualization	28%	26%	21%
RPA	19%	16%	14%
Software programming	11%	Did not previously ask	Did not previously ask

Using Technology Where it Matters Most— Responses by AUM

Did your fund complex <u>increase automation in the past year</u> by using any of the following	Less than \$100B AUM	Larger than \$100B AUM
Excel tools (i.e. macros/queries/pivot tables)	43%	26%
Data visualization tools	12%	37%
Data analytics	10%	37%
Workflow management tools	8%	34%
Data management/Data Lake for valuation data	12%	21%
Robotics process automation (RPA)	6%	16%

Using Technology Where it Matters Most– Responses by AUM

Does your fund complex <u>currently use</u> any of the following	Less than \$100B AUM	Larger than \$100B AUM
Excel tools (i.e. macros/queries/pivot tables)	94%	100%
Data analytics	24%	58%
Data management/Data Lake for valuation data	20%	53%
Workflow management tools	18%	45%
Data visualization tools	16%	45%
Robotics process automation (RPA)	10%	32%
Software programing	10%	13%

Roles and Responsibilities

Changes in Roles and Responsibilities

Chief compliance officer

- Percentage of FV survey participants responsible for updating valuation policies and procedures declined from 59%

Head trader

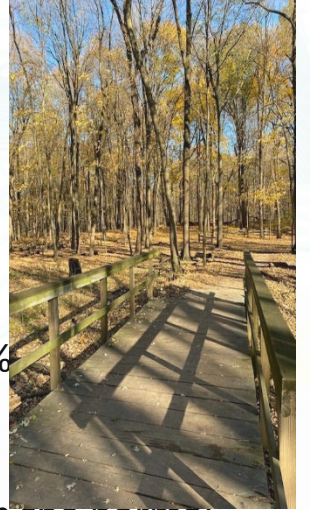
- Percentage of FV survey participants responsible for determining the fair value of an investment when pricing from the normal sources is not available or has been determined to be unreliable declined from 40% to 16%.
- Percentage of FV survey participants responsible for evaluating the appropriateness of the valuation of investments with only one pricing source declined from 40% to 19%.

Portfolio manager

- Percentage of FV survey participants responsible for determining the fair value of an investment when pricing from the normal sources is not available or has been determined to be unreliable declined from 34% to 16%.
- Percentage of FV survey participants responsible for evaluating the appropriateness of the valuation of investments with only one pricing source declined from 29% to 16%.

Head of the Internal Pricing Committee

- 7% changed the head of the internal pricing committee as a result of Rule 2a-5 adoption.



Other Key Findings

Key Findings Related to Certain Investment Types

- 62% percent of FV survey participants reported using a zero trigger to determine when to adjust the prices of fair value equities that trade on foreign exchanges closing before 4 p.m. ET, compared with 61% last year.
- 59% percent of FV survey participants use bid pricing exclusively when valuing fixed-income securities, nearly unchanged from the prior year, and 31% use mean pricing.
- 84% percent of FV survey participants have valued fixed-income investments using a price adjusted to reach 4 p.m. ET, an increase from the 79% reporting it last year, and the highest percentage in the FV survey results since asking this question.
- Only two FV survey participants changed their valuation policies or procedures relating to non-institutional-sized lots (odd lots).
- 50% of FV survey participants with investments in private equities indicated that they are maintaining internal documentation of their consideration of calibration for their private equity investments, up from 34% reporting this last year.

What is the Status of Foreign Equity valuation? Other Survey Findings – by AUM

Use of a zero trigger to value foreign equities	2022 ALL	2021 ALL	2022 >\$100 AUM
Yes	62%	61%	62%
No	38%	39%	38%

What is the Status of Fixed Income Valuation? Other Survey Findings – by AUM

Value fixed-income investments using a price adjusted to reach 4 p.m. ET	2022 ALL	2021 ALL	2020 ALL	2022 >\$100 AUM
Yes	84%	79%	69%	81%
Yes, we obtain those prices, but we normally use the pre-4 p.m. price typically provided	7%	4%	8%	14%
No	9%	17%	23%	5%

What is the Status of Fixed-income Pricing? Other Survey Findings – by AUM

Use of bid or mean for fixed-income	2022 ALL	2021 ALL	2022 >\$100 AUM
Bid for all	59%	60%	59%
Mean for all	31%	27%	27%
Differs based on security type	11%	13%	14%

What is the Status of Fixed-income Pricing? Other Survey Findings – by AUM

If you use <u>bid</u> as a default option for all, please select the rationale for using it.	2022 ALL	2022 >\$100 AUM
Traders have indicated that bid is the most representative of actual selling prices	67%	62%
We have performed a study and have determined that bid prices are closer to the actual selling prices	33%	43%
Other	22%	19%

If you use <u>Mean</u> as a default option for all, please select the rationale for using it.	ALL	>\$100 AUM
Traders have indicated that mean is the most representative of actual selling prices	54%	22%
We have performed a study and have determined that mean prices are closer to the actual selling prices	38%	56%
Other	17%	33%

“What’s in the Other” Responses for the Use of Bid?



- **Industry standard** practice in US
- Generally, the use of bid prices represents best practice based on **discussions with service providers and other asset managers**.
- This is consistent with standard practices and focuses on **exit values**. **Back testing** is able to support bid side valuations.
- We use **bid for long positions** and **ask for short positions** based on **studies** performed over the last few years that these are most representative of actual selling prices. We have done **back testing** over a 3-6 month period on multiple occasions and concluded that the sale trades of the fund are closer to bid the majority of the time
- **ASC 820** indicates that bid is the most suitable
- Typically, **industry standard**
- We assume bid price is the most **conservative**.
- We use **mid pricing on convertible securities** after performing a **study** to determine that mid prices are actually closer to the actual sale than the bid prices.

What is the Status of Fixed-income Pricing? Other Survey Findings

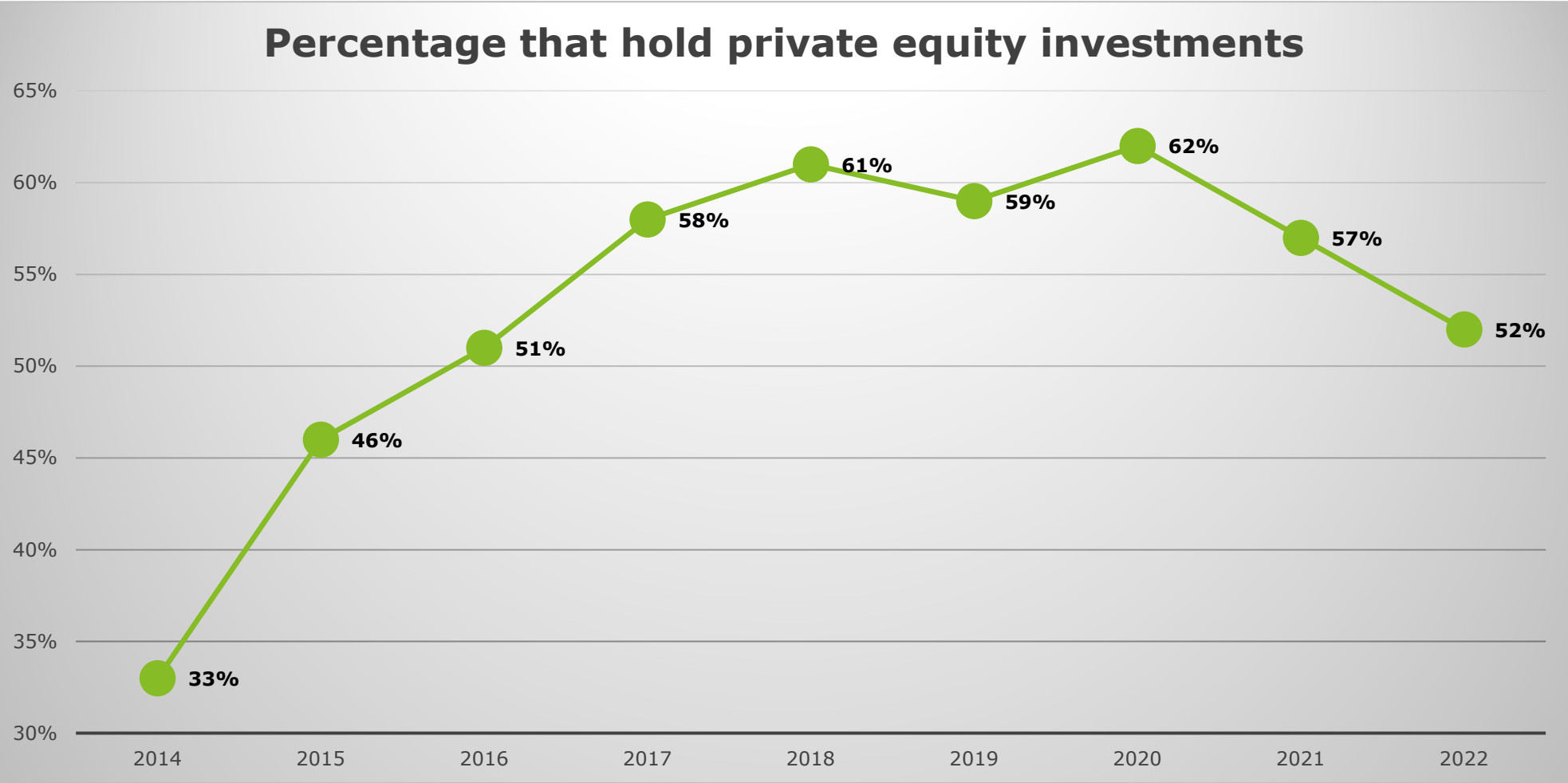
How are you enhancing your pricing validations through <u>back-testing</u> ?	2022 ALL	2022 >\$100 AUM
Reviewing pricing vendor reports	21%	24%
Building internal reports	30%	21%
Combination of the two above	49%	55%

What is the Status of Derivative Valuation? - Other Survey Findings – by AUM

How do you determine valuation for <u>cleared</u> swaps?	2022 ALL	2021 ALL	2020 ALL	2019 ALL	2018 ALL	2022 >\$100 AUM
Pricing vendor	70%	65%	62%	63%	54%	83%
Clearinghouse	21%	26%	30%	29%	28%	11%

Private Equities – Trend Line

Percentage that hold private equity investments



Other Key Findings – Hot Topics



Russian invasion of Ukraine

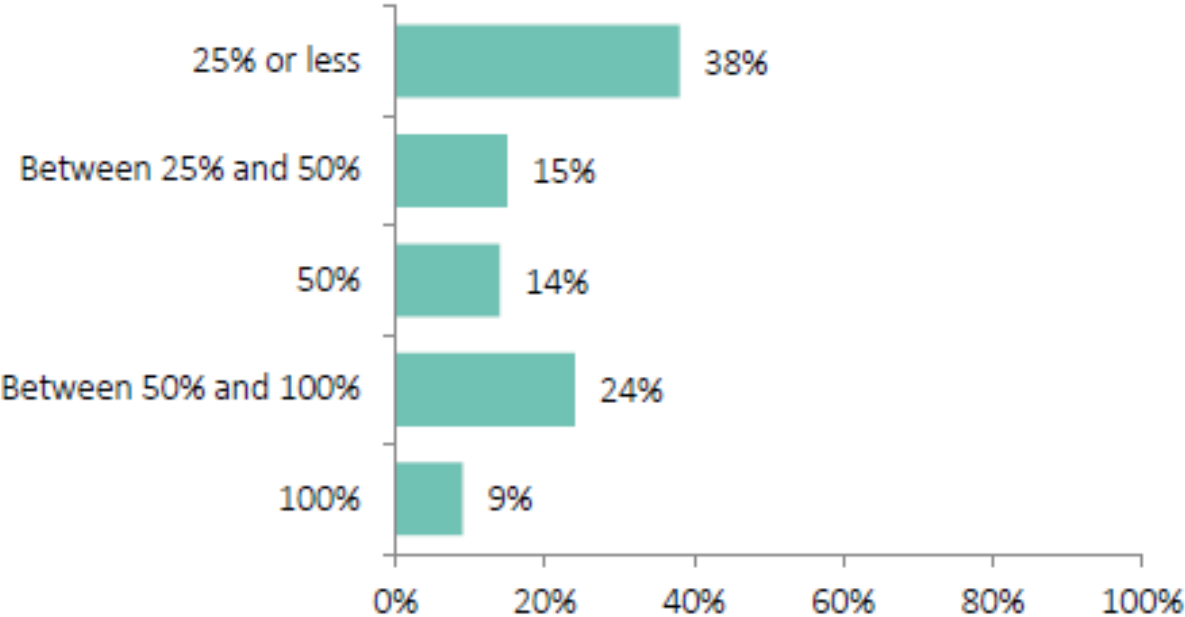
- 49% of FV survey participants securities affected by the Russian invasion indicated that they would have reported to the board the effect of valuation under Rule 2a-5’s “prompt” reporting requirement, subject to meeting materiality thresholds, while 25% indicated that they would have reported to the board the effect of valuation under the quarterly board reporting requirement.
- 11% of FV survey participants indicated that, as a result of the difficulties accessing the Russian equity market after its invasion of Ukraine and the troubles experienced in valuing certain stocks, bonds, and financial instruments of that region, their approach to planning for contingencies changed should the primary valuation source not be available. For example, 6% have created or altered the hierarchy of options for valuing investments.

Cross trades

- More than 50% of the FV survey participants engage in cross trading. Today, 12% classify treasury securities as Level 1.

Other Key Findings – Remote Work

What percentage of your valuation resource team do you expect to continue to work on a remote basis?

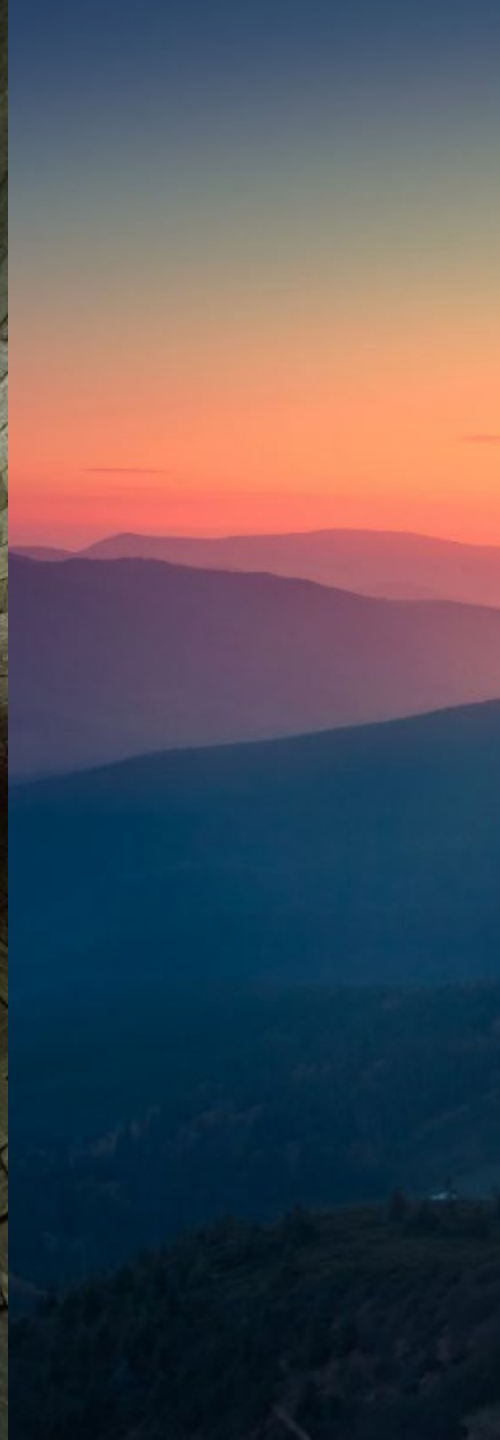


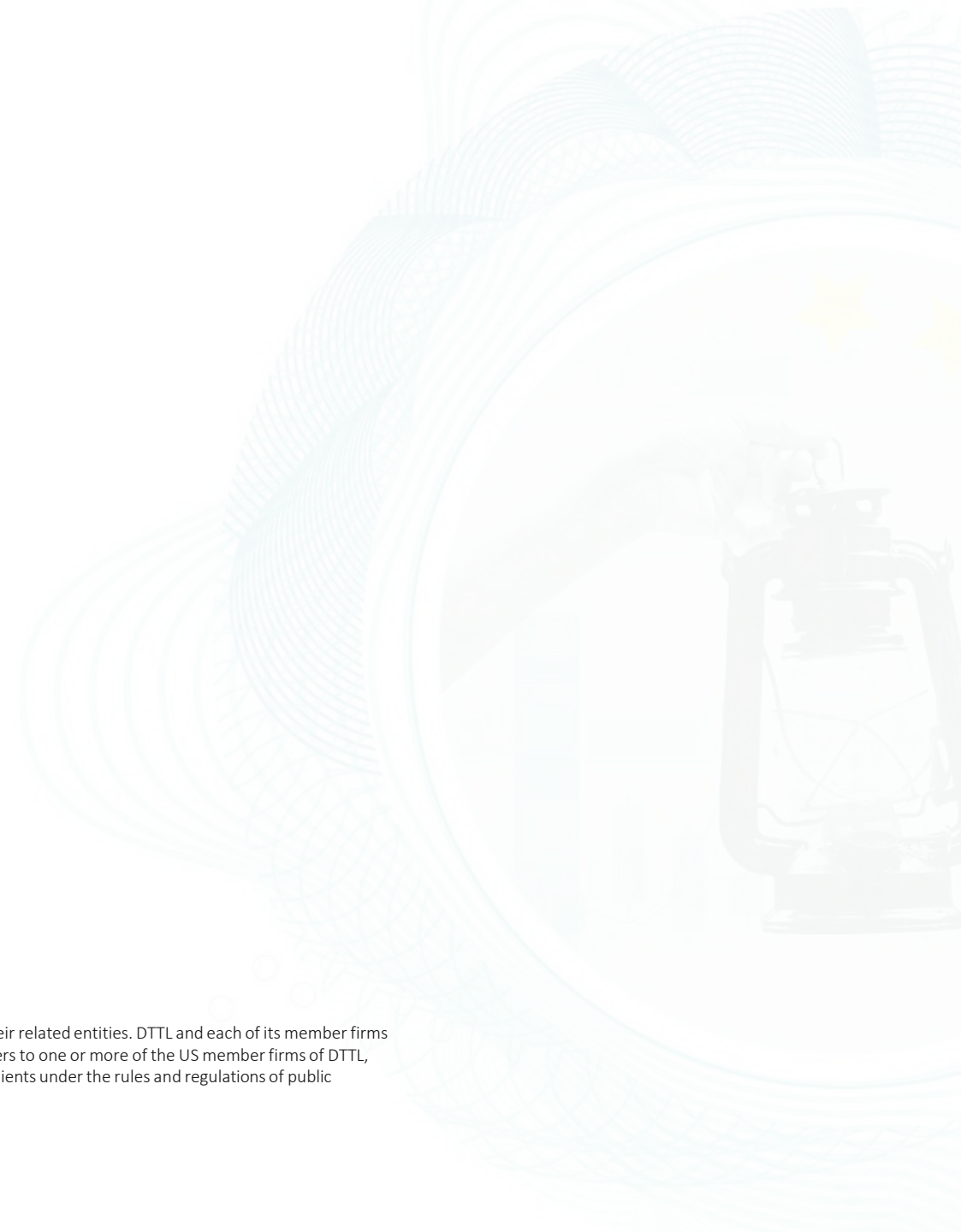
Looking Ahead - Additional Forward Thoughts

- Diversity exists at the start of Rule 2a-5 adoption in many specific areas, but such may converge as fund groups benchmark against each other.
- Rule 2a-5 reporting requirements may be prescriptive, but Rule 2a-5 should not reduce the board's focus on effective active board oversight.
- A focus on risk assessment may eliminate unnecessary procedures and increase effectiveness of activities in accordance with the objectives of Rule 2a-5.
- Sixty-five percent of FV survey participants made technology changes in the last year, and it shows that more gains are possible.
- The impact of the Russian invasion of Ukraine shows that having a "Plan B" valuation option for investments could be valuable.
- The process of private equity valuation has not changed much, but, in the spirit of Rule 2a-5, such may be with exploring.



Q&A





About Deloitte

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee (“DTTL”), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as “Deloitte Global”) does not provide services to clients. In the United States, Deloitte refers to one or more of the US member firms of DTTL, their related entities that operate using the “Deloitte” name in the United States and their respective affiliates. Certain services may not be available to attest clients under the rules and regulations of public accounting. Please see www.deloitte.com/us/about to learn more about our global network of member firms.

Copyright © 2022 Deloitte Development LLC. All rights reserved.