

To: All members and other interested parties

Ref: 21/038

Classification: General Updates Trading

Date: 02 March 2021

Subject: **LME DISCUSSION PAPER ON MARKET STRUCTURE 2021 – ADDITIONAL DATA**

Summary

1. Attached to this Notice is a number of additional datasets provided by the LME, as requested by some market participants to assist in the formulation of feedback to the LME Discussion Paper on Market Structure (the “**Discussion Paper**”).

Background and overview

2. In the Discussion Paper, circulated in Notice 21/011, the LME published the data which it considered most relevant to its various proposals.
3. The vast majority of LME trading data is publicly available. It was always the intention of the LME that, if respondents wished to illustrate their arguments with data analysis, they would be able to retrieve the relevant data and employ it in their responses.
4. However, in the context of market conversations around the Discussion Paper, the LME notes requests from certain market participants for the publication of further data. As the Discussion Paper sets out, the LME encourages feedback and collaboration as well as transparency more broadly. In this context the LME provides further data in this presentation, specifically on objections, volume and participation in the price discovery process, to all market participants.
5. In addition to collating publicly-available data, the LME has additionally made available some data that is not ordinarily published by the LME. Both datasets are contained in this paper.
6. This document includes explanatory slides for the new additional datasets, outlining key considerations and also LME analysis on the data itself. In summary, because the underlying themes had already been considered by the LME in its own analysis, the LME does not believe that any of the data changes its view on the proposals, as articulated in the Discussion Paper. However, respondents are of course invited to give their own views on these matters.
7. The LME is happy to discuss this analysis, or other data requests should stakeholders require.
8. The key assertion which the LME has noted from certain market participants is that, when comparing volumes pre- and post- the electronic transition, a broader set of venues should be included in the analysis. In its Discussion Paper, the LME has compared the volumes in the Ring (prior to the temporary suspension of the Ring and the transition to electronic pricing) to those on LMEselect (subsequent to the electronic transition), because these are the volumes considered by the pricing methodology in place at each time. This, in the view of the LME, is the most appropriate comparison, because the quality of a pricing process should be measured by the volumes transacted through that pricing process. Crucially, the LME did not assert in the Discussion Paper that total volumes (during the pricing period, or otherwise) had increased as a result of the electronic transition. Total volumes are subject to a much broader range of factors (including general market conditions), and – while commercially relevant – are not, in the view of the LME, an appropriate measure of the quality of the pricing methodology.



9. Accordingly, while the LME notes that there are alternative comparison methodologies (including adding LMEselect volumes to the Ring volumes in the pre-transition volume analysis, or adding inter-office trades to both), the LME does not agree that such comparisons are as meaningful as its adopted approach. However, in the interest of transparency and convenience for respondents, the publicly available data has been compiled in this pack. (In respect of Basis Ring trades, see further overleaf).
10. The LME also notes market requests to see a comparison of Ring and electronic data not just for the 3M Closing Price process, but also for (i) carries traded on the close, and (ii) the Cash Official Prices. The LME has provided data for these – but does not believe that the trends are meaningfully different than for the 3M Closing Prices, as originally presented in the Discussion Paper.
11. The LME also notes requests for certain information which is not ordinarily published by the LME. Although not, in the view of the LME, relevant to the questions raised in the Discussion Paper, in the interest of transparency, the LME is making the two requested datasets available. The two datasets are objections data and Basis Ring volume data.
12. Objections regarding LME prices (including data on the source, by membership category, and success of such objections). As background, the LME's pricing process features a robust objections process, whereby members can query any price, and the LME's Trading Operations team will review the price and (if the objection is valid) revise that price.
13. The LME notes the view of certain participants that the increased number of objections since the temporary transition to electronic pricing means that electronic pricing is less reliable. However, in the view of the LME, objections should not be a metric used to assess the quality of the pricing process. Indeed, the LME welcomes objections, because they demonstrate that there is effective engagement in the LME's pricing processes. The LME acknowledges that the number of objections has increased since the transition to electronic pricing. However, the LME would note that objections now arise from a broader set of members, including a much stronger participation by Category 2 members in the objections process as these members are now directly involved in the pricing process. In the view of the LME, these trends are consistent with the "democratisation" of the pricing process enabled by the broader participation in pricing. The quantity of objections would also be expected to vary with market conditions (including volumes and volatility).
14. As such, the LME does not believe that any specific conclusions can or should be drawn from the number of objections, which is why the data did not form part of the Discussion Paper. However, following market requests, this information is now made available in the interests of the fullest transparency, and respondents are welcome to comment on it (including stating whether they believe it to be relevant to the topics in the Discussion Paper).
15. In order to illustrate the enhanced participation (which itself could be expected to give rise to a greater number of objections), the LME is also providing a dataset on the number of direct participants in the pricing process (for the 3M Closing Prices and the Cash Official Prices), being the Ring pricing process before the temporary electronic transition, and the LMEselect pricing window during the temporary electronic transition. Again this type of data is not ordinarily published.
16. Basis Ring trade volumes which, prior to the temporary transition to electronic pricing, were used by Category 1 members to book trades with counterparties at a price which had been discovered in the Ring (although, crucially, the Basis Ring trades themselves were not traded in the Ring, and were not considered by the Ring pricing methodology).
17. The LME does not view Basis Ring trade volumes as relevant to the assessment of an optimal pricing venue, because Basis Ring trades did not contribute to the Ring-based pricing process (and, indeed, arguably removed liquidity from the Ring, because volumes previously crossed as Basis Ring trades did not need to be traded across the Ring). Furthermore, during the temporary Ring suspension, Basis Ring trades can no longer be booked – but, it is believed that much of this activity has migrated to standard inter-office trades. It is not possible, within the LME's booking structure, to fully track this transition – and hence, it is not possible to provide a "before and after" analysis in respect of Basis Ring trades.
18. As such, the LME does not believe that any specific conclusions can or should be drawn from the volume of Basis Ring trades prior to the temporary Ring suspension, which is why the data did not form part of the Discussion Paper. However, following market requests, this information is now made available in the interests of the fullest transparency, and respondents are welcome to comment on it (including stating whether they believe it to be relevant to the topics in the Discussion Paper).



Jamie Turner
Head of Market Structure

cc: Board directors
 User Committee
 Physical Market Committee
 All metals committees
 Ring Dealers Committee
 Traded Options Committee
 Warehousing Committee

LME Discussion Paper on Market Structure

Additional data

March 2021



SETTING THE GLOBAL STANDARD



Introduction

Feedback, collaboration and transparency around market structure – additional data

- In the Discussion Paper on Market Structure, the LME published the data which it considered most relevant to its various proposals.
- The vast majority of LME trading data is publicly available. It was always the intention of the LME that, if respondents wished to illustrate their arguments with data analysis, they would be able to retrieve the relevant data and employ it in their responses.
- However, in the context of market conversations around the Discussion Paper, the LME notes requests from certain market participants for the publication of further data. As the Discussion Paper sets out, the LME encourages feedback and collaboration as well as transparency more broadly. In this context the LME provides further data in this presentation, specifically on objections, volume and participation in the price discovery process, to all market participants.
- In addition to collating publicly-available data, the LME has additionally made available some data that is not ordinarily published by the LME. Both datasets are contained in this paper.
- This document includes explanatory slides for the new additional datasets, outlining key considerations and also LME analysis on the data itself. In summary, because the underlying themes had already been considered by the LME in its own analysis, the LME does not believe that any of the data changes its view on the proposals, as articulated in the Discussion Paper. However, respondents are of course invited to give their own views on these matters.
- The LME is happy to discuss this analysis, or other data requests should stakeholders require.



Rationale for additional data

Publicly available data – additional volumes around pricing windows

Regarding the requests for publication of further data:

- The key assertion which the LME has noted from certain market participants is that, when comparing volumes pre- and post- the electronic transition, a broader set of venues should be included in the analysis. In its Discussion Paper, the LME has compared the volumes in the Ring (prior to the temporary suspension of the Ring and the transition to electronic pricing) to those on LMEselect (subsequent to the electronic transition), because these are the volumes considered by the pricing methodology in place at each time. This, in the view of the LME, is the most appropriate comparison, because the quality of a pricing process should be measured by the volumes transacted through that pricing process. Crucially, the LME did not assert in the Discussion Paper that total volumes (during the pricing period, or otherwise) had increased as a result of the electronic transition. Total volumes are subject to a much broader range of factors (including general market conditions), and – while commercially relevant – are not, in the view of the LME, an appropriate measure of the quality of the pricing methodology.
- Accordingly, while the LME notes that there are alternative comparison methodologies (including adding LMEselect volumes to the Ring volumes in the pre-transition volume analysis, or adding inter-office trades to both), the LME does not agree that such comparisons are as meaningful as its adopted approach. However, in the interest of transparency and convenience for respondents, the publicly available data has been compiled in this pack. (In respect of Basis Ring trades, see further overleaf).
- The LME also notes market requests to see a comparison of Ring and electronic data not just for the 3M Closing Price process, but also for (i) carries traded on the close, and (ii) the Cash Official Prices. The LME has provided data for these – but does not believe that the trends are meaningfully different than for the 3M Closing Prices, as originally presented in the Discussion Paper.



Rationale for additional data (cont'd)

The LME also notes requests for certain information which is not ordinarily published by the LME. Although not, in the view of the LME, relevant to the questions raised in the Discussion Paper, in the interest of transparency, the LME is making the two requested datasets available.

Objections data

- Objections regarding LME prices (including data on the source, by membership category, and success of such objections). As background, the LME's pricing process features a robust objections process, whereby members can query any price, and the LME's Trading Operations team will review the price and (if the objection is valid) revise that price.
- The LME notes the view of certain participants that the increased number of objections since the temporary transition to electronic pricing means that electronic pricing is less reliable. However, in the view of the LME, objections should not be a metric used to assess the quality of the pricing process. Indeed, the LME welcomes objections, because they demonstrate that there is effective engagement in the LME's pricing processes. The LME acknowledges that the number of objections has increased since the transition to electronic pricing. However, the LME would note that objections now arise from a broader set of members, including a much stronger participation by Category 2 members in the objections process as these members are now directly involved in the pricing process. In the view of the LME, these trends are consistent with the "democratisation" of the pricing process enabled by the broader participation in pricing. The quantity of objections would also be expected to vary with market conditions (including volumes and volatility).
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Basis Ring data

- Basis Ring trade volumes which, prior to the temporary transition to electronic pricing, were used by Category 1 members to book trades with counterparties at a price which had been discovered in the Ring (although, crucially, the Basis Ring trades themselves were not traded in the Ring, and were not considered by the Ring pricing methodology).
- The LME does not view Basis Ring trade volumes as relevant to the assessment of an optimal pricing venue, because Basis Ring trades did not contribute to the Ring-based pricing process (and, indeed, arguably removed liquidity from the Ring, because volumes previously crossed as Basis Ring trades did not need to be traded across the Ring). Furthermore, during the temporary Ring suspension, Basis Ring trades can no longer be booked – but, it is believed that much of this activity has migrated to standard inter-office trades. It is not possible, within the LME's booking structure, to fully track this transition – and hence, it is not possible to provide a "before and after" analysis in respect of Basis Ring trades.
- As such, the LME does not believe that any specific conclusions can or should be drawn from the volume of Basis Ring trades prior to the temporary Ring suspension, which is why the data did not form part of the Discussion Paper. However, following market requests, this information is now made available in the interests of the fullest transparency, and respondents are welcome to comment on it (including stating whether they believe it to be relevant to the topics in the Discussion Paper).



New data being published

Additional data and analysis



1. Objection data

- The number of objections broken down by member category
- The number of objections upheld broken down by member category



2. Volume in the pricing process and around the pricing window

- Volume directly contributing to the pricing process
- Volume around the pricing period
- Basis Ring volume prior to the Ring suspension



3. Participation in the price discovery process

- The number of participants trading during the pricing windows before and after the Ring suspension



Objection data

What is the new dataset?

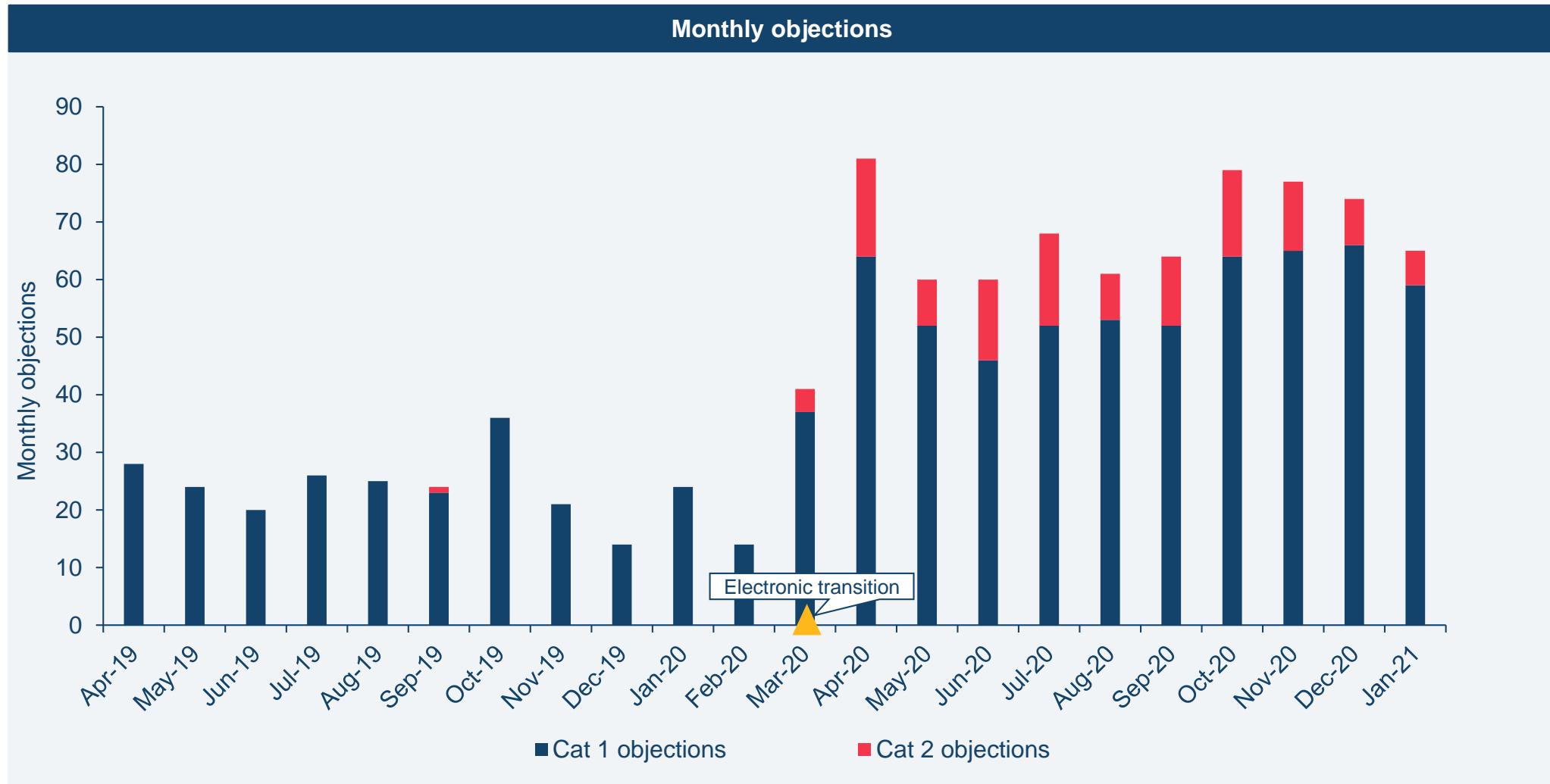
- The LME publishes provisional Closing Prices each day after the relevant Closing Price period for each metal.
- Category 1, 2 and 4 Members may submit objections to the LME in relation to the provisional prices.
- This data has not previously been published externally.

Key considerations

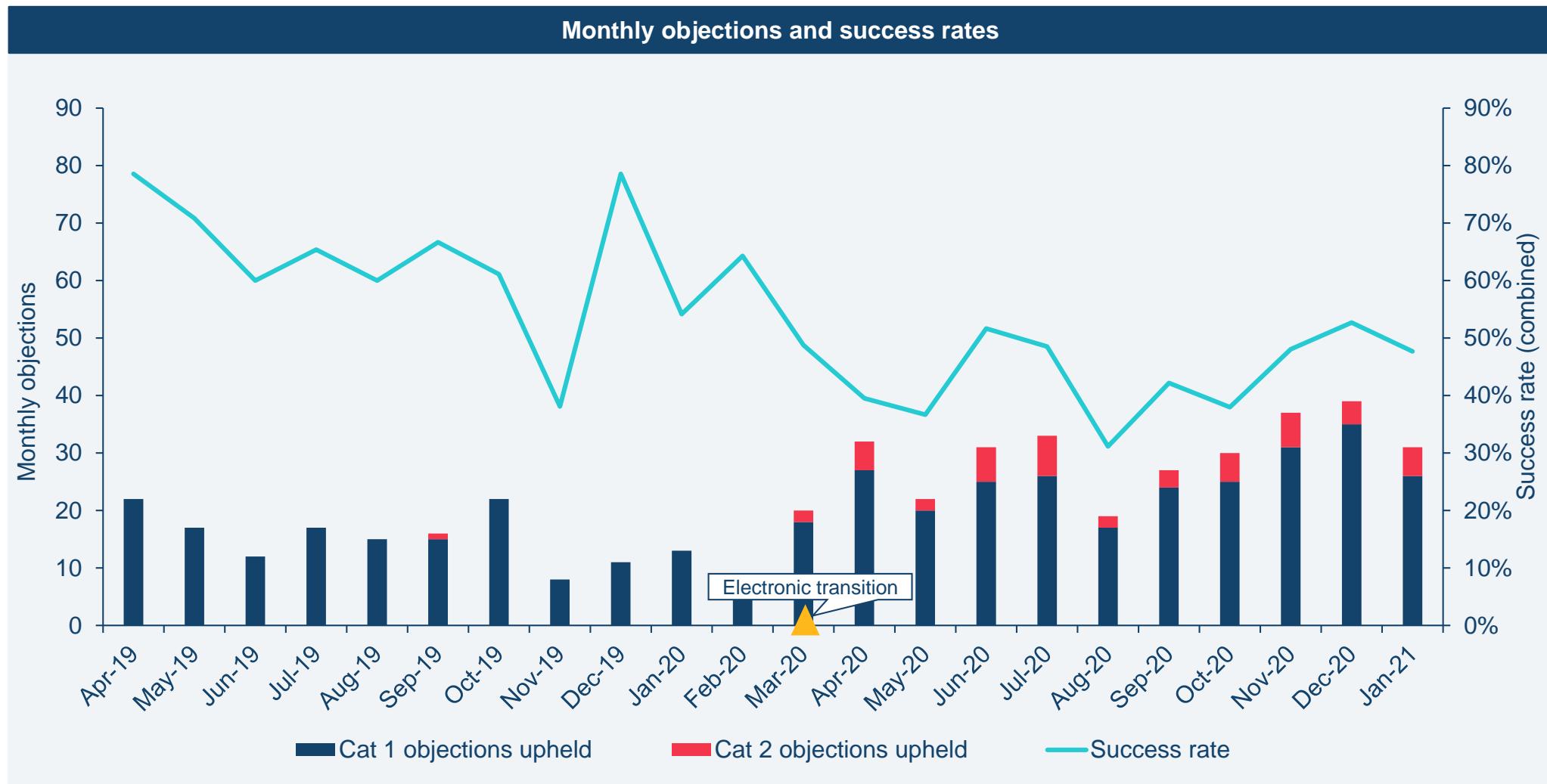
- Objections are a positive feature of the price discovery process that support transparency in the pricing methodology.
- Prior to the Ring suspension, objections came almost exclusively from Category 1 members. As more participants have become directly involved in the pricing process we have seen more objections from Category 2 members. The number of Category 1 member objections has also increased.
- Since prices have been established electronically the pricing process has been more transparent with all participants able to directly access all order and trade data in real-time on the market data feed.
- The LME's current view is that, with broader direct participation, more parts of the curve actively trading and greater transparency, a greater number of objections would be expected. The LME welcomes feedback from participants in relation to this.



Number of objections



Number of objections upheld



Volume in the pricing process and during the pricing window

Why is volume in the pricing process important?

- As the global centre of metals price discovery, the representativeness, robustness and integrity of the LME benchmark prices is crucial to broader metals market and protecting them remains at the heart of the LME's core strategy.
- In order to ensure the pricing methodology is as robust as possible, a number of factors should be considered, including most significantly: access for participants, transparency, and trading volume captured by the methodology.
- Therefore when assessing the effectiveness and robustness of the price discovery process, the volume in the pricing window is a crucial component of any analysis.

Why are we publishing additional data on volume around the pricing window?

- In section 4 of the Discussion Paper, the LME published data showing the 3M volumes during the Closing Price period in the Ring (pre Ring suspension) vs LMEselect (post Ring suspension) for comparable periods. This remains the most relevant data on volume directly contributing to price formation during the pricing process.
- However, a number of participants have requested that the LME publish additional analysis on volumes in and around the pricing periods. This analysis therefore also looks at volume on other trading venues during the period of price discovery.

Key considerations

- When looking at volume directly contributing to Closing Price formation; for Ring volumes any volume that traded in the Kerb session is counted; for LMEselect volumes we use a 5 minute window for outrights and a 10 minute window for carries.
- When looking at volume on other venues during the pricing window; a 5 minute window is used for outrights (to align to the VWAP period) and a 10 minute window is used for carries (to align to the Kerb times).
- The analysis uses only normal member trades. Under the LME market structure any client trade that interacts directly with the pricing process will give rise to a corresponding member trade that is counted.
- The analysis looks only at market trades (not transfers, give-ups or other administrative trades).
- The analysis uses the same 127 day periods before and after the Ring suspension that were used in the original Discussion Paper analysis.



2 Volume in the pricing process and around the pricing window

What is the additional data on volume in and around the pricing period?

Summary matrix of additional datasets

In this section we look at three datasets: **3M volume during the Closing Price period**, **Carry volumes during the Closing Price period** and **Cash volumes during the Official Price period**. These three datasets are analysed through four different methodologies:

- A Direct volume:** volume directly contributing to the price discovery process. This consists of all Ring volume from the relevant Ring session prior to the Ring suspension. Since prices have been established electronically this includes a 5 min window for outright and 10 min window for carries.
- B Direct volume + LMEselect volume during Ring pricing window:** this adds LMEselect volume (5 min outright window & 10 min carry window) that traded during the relevant Ring pricing window. However it should be noted that this additional volume did not directly contribute to price discovery.
- C Direct volume + LMEselect and inter-office volume during the pricing window:** this adds LMEselect volume (5 min outright & 10 min carry windows) and inter-office volume (5 min outright & 10 min carry windows) that traded during the pricing window. However it should again be noted that this additional volume did not directly contribute to price discovery.
- D Basis Ring volume (see next slide):** Basis Ring trades are booked throughout the day so can't be directly compared alongside the other volume around the pricing period which is assessed using a 5 or 10 min period. This volume does not directly contribute to price discovery, furthermore where netting takes place it can take direct volume away from the price discovery process.

Methodologies	Datasets		
	Closing Price	Official Price	
Directly contributing to price discovery	A 3M outright	Carries	Cash outright
Additional data not directly contributing to price discovery	B 3M outright	Carries	Cash outright
Not contributing to price discovery	C 3M outright	Carries	Cash outright
	D 3M outright	Carries	Cash outright



Basis Ring volumes explained

What is the new dataset?

- A Basis Ring trade is a trade between a Category 1 Member and another participant, that is filled during the relevant Ring or kerb session, basis a price discovered in the Ring.
- The data shows Basis Ring volumes for the same period prior to the Ring suspension that is used for all other datasets (23 Sep 2019 to 20 Mar 2020 – 127 days).
- Trading fees for Basis Ring trades are 44% lower than the equivalent inter-office trades (for outright and long-dated carries).
- During the period of Ring suspension it is no longer possible to trade on the basis of a Ring price and thus Basis Ring trades are no longer available.

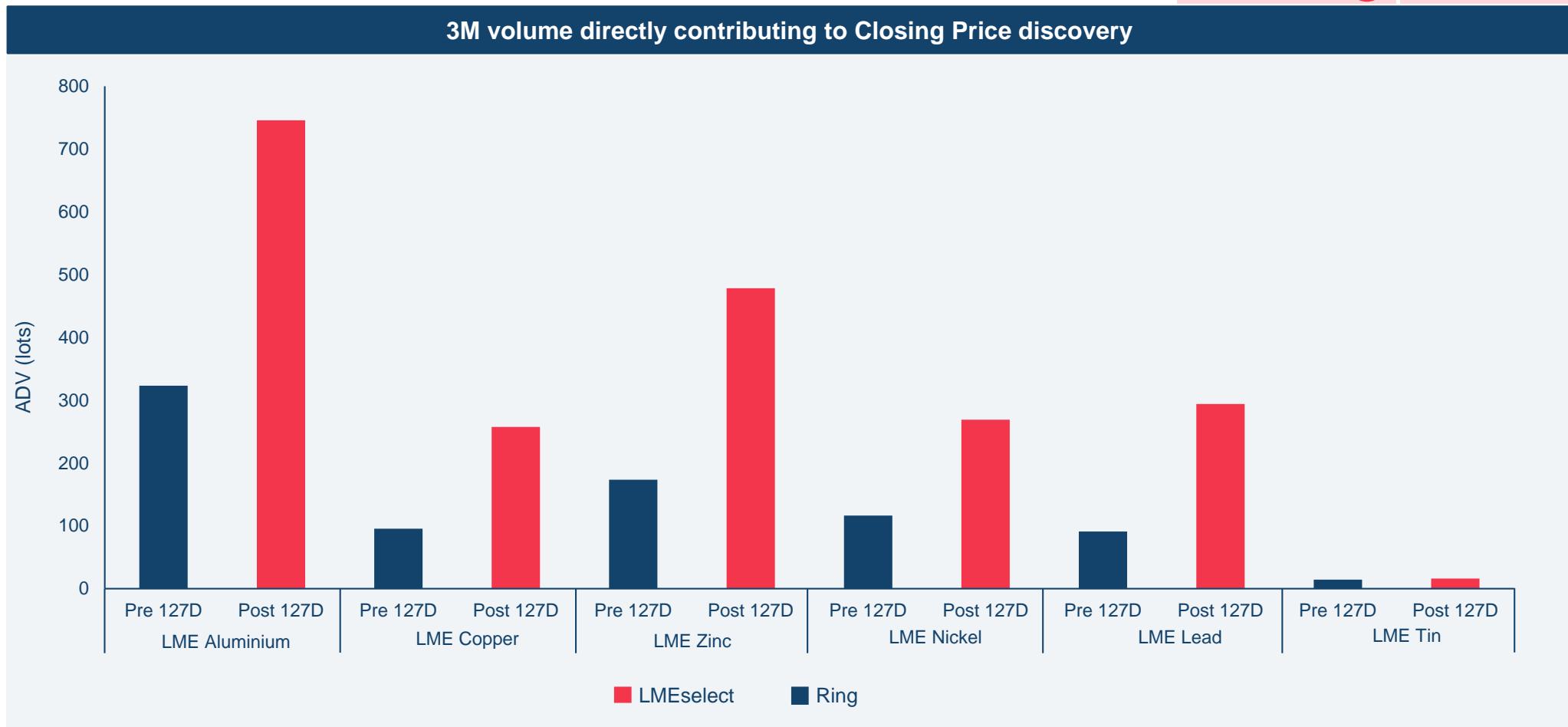
Key considerations

- Basis Ring trades are booked with a time code rather than an explicit trade time (e.g Kerb 2 for Closing Price related trades), however the trades are input throughout the trading day. This means they can't be directly compared with volumes explicitly traded during the pricing period.
- Basis Ring trades themselves do not directly contribute to the price discovery process, however where there is a related Ring trade this is included in price discovery and Ring volume as normal (and in previously published data).
- As Basis Ring trades do not contribute to the price discovery process, they do not directly improve the quality of pricing which, in the view of the LME, should be assessed using only the direct Ring trades.
- It is possible for Members to internalise Basis Ring trades (hence Basis Ring volumes are normally significantly higher than Ring volumes).
- During the Ring suspension, some of this business has transitioned to other venues (inter-office and LMEselect) as normal trades. As such, it is not possible to identify this subset among other trades.



2 3M volume directly contributing to Closing Price discovery

Methodology: A 3M outright



This analysis shows the **volume directly contributing to Closing Price discovery** for the 3M prompt date. In the view of the LME this is therefore the most relevant dataset to use in an assessment of the representativeness and robustness of the Closing Price process, and was included in the Discussion Paper.

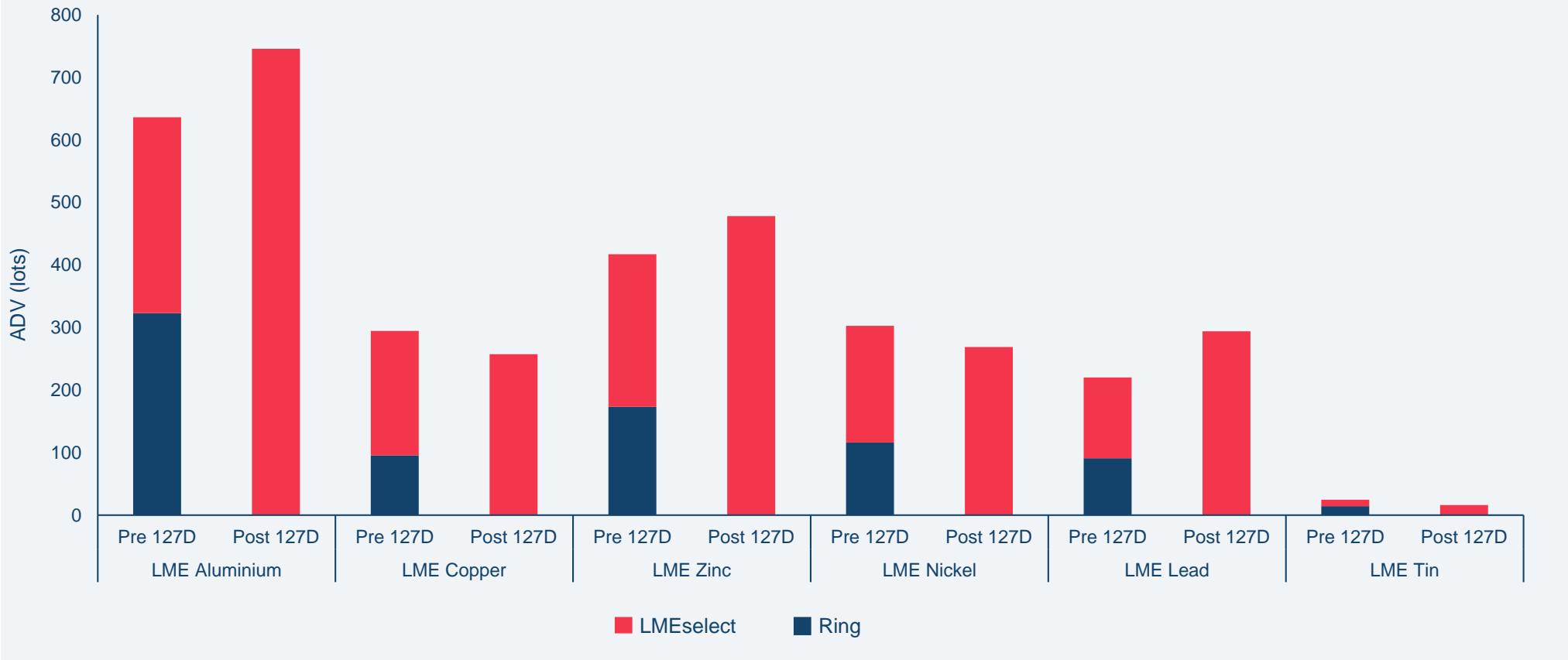
- Pre 127D: The period when the Ring was open – 23 Sep 2019 to 20 Mar 2020 (127 days), after kerb was extended to 10 mins per metal. All Ring volume during kerb 2 is included.
- Post 127D: The period when the Ring was suspended – 12 Jun 2020 to 9 Dec 2020 (127 days) – 5 min VWAP period for each metal.



2 3M volume during the Closing Price discovery period

Methodology: **B** 3M outright

3M volume during the Closing Price discovery period



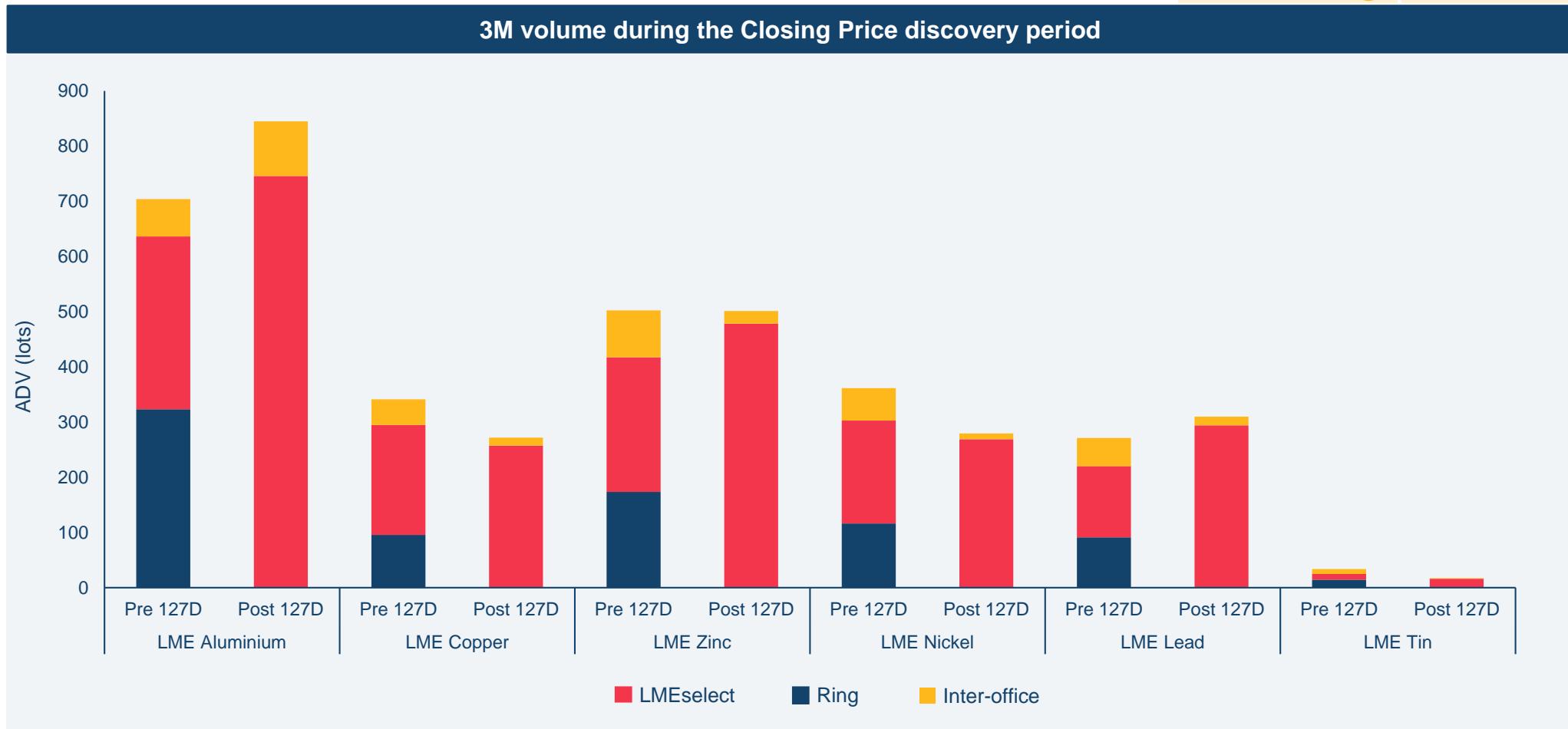
Prior to the Ring suspension, LMEselect volume that traded during the Closing Price window **did not directly contribute towards price discovery** therefore in the view of the LME should not be included in an assessment of the representativeness and robustness of the Closing Price discovery process.

- Pre 127D: The period when the Ring was open – 23 Sep 2019 to 20 Mar 2020 (127 days), after kerb was extended to 10 mins per metal. All Ring volume during kerb 2 is included. LMEselect volumes use the respective 5 min closing period for each metal
- Post 127D: The period when the Ring was suspended – 12 Jun 2020 to 9 Dec 2020 (127 days) – 5 min VWAP period for each metal.



2 3M volume during the Closing Price discovery period

Methodology: C 3M outright



LMEselect volume that traded during the Closing Price window prior to the Ring suspension, and inter-office volume before and after Ring suspension **did not directly contribute towards price discovery** therefore in the view of the LME should not be included in any assessment of the representativeness and robustness of the Closing Price discovery process.

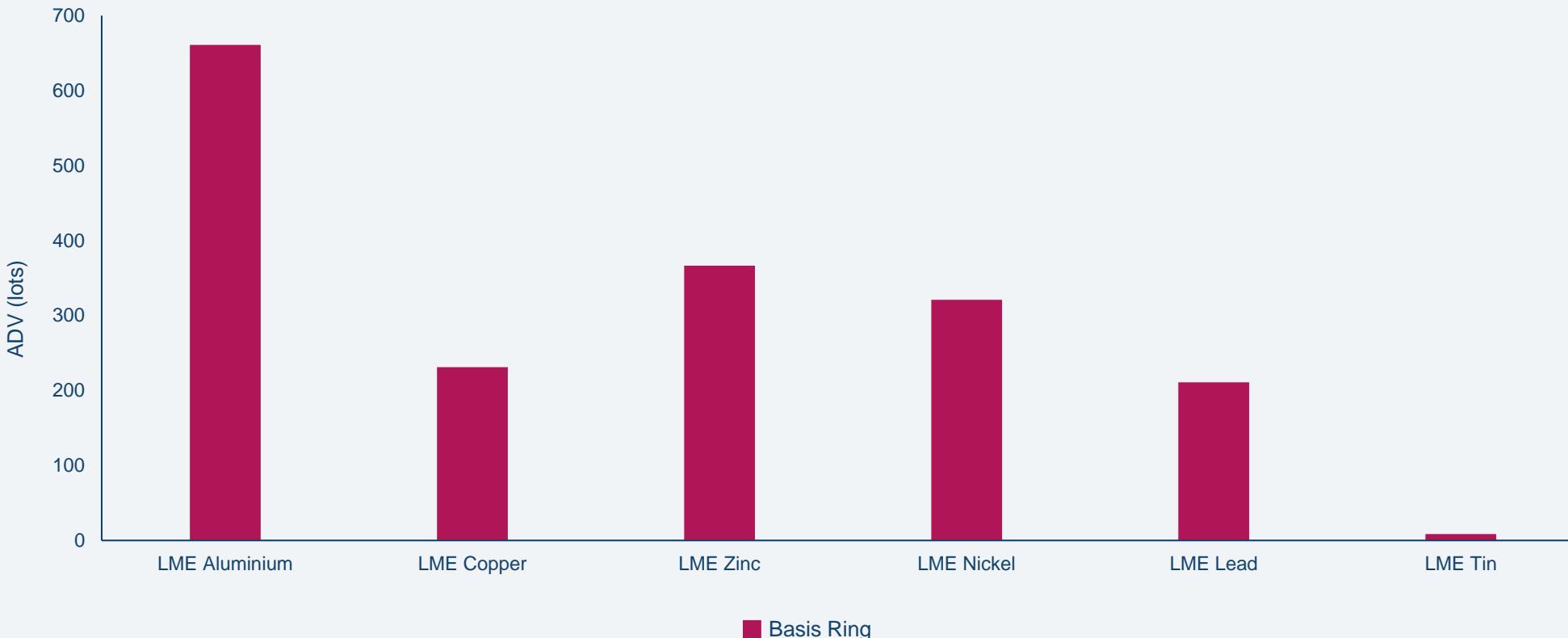
- Pre 127D: The period when the Ring was open – 23 Sep 2019 to 20 Mar 2020 (127 days), after kerb was extended to 10 mins per metal. All Ring volume during kerb 2 is included. LMEselect volumes use the respective 5 min closing period for each metal. Inter-office uses the same 5 min period.
- Post 127D: The period when the Ring was suspended – 12 Jun 2020 to 9 Dec 2020 (127 days) – 5 min VWAP period for each metal. Inter-office uses the same 5 min period.



2 3M Basis Ring volume referencing the Closing Price discovery period

Methodology: D 3M outright

3M Basis Ring volume referencing the Closing Price discovery period



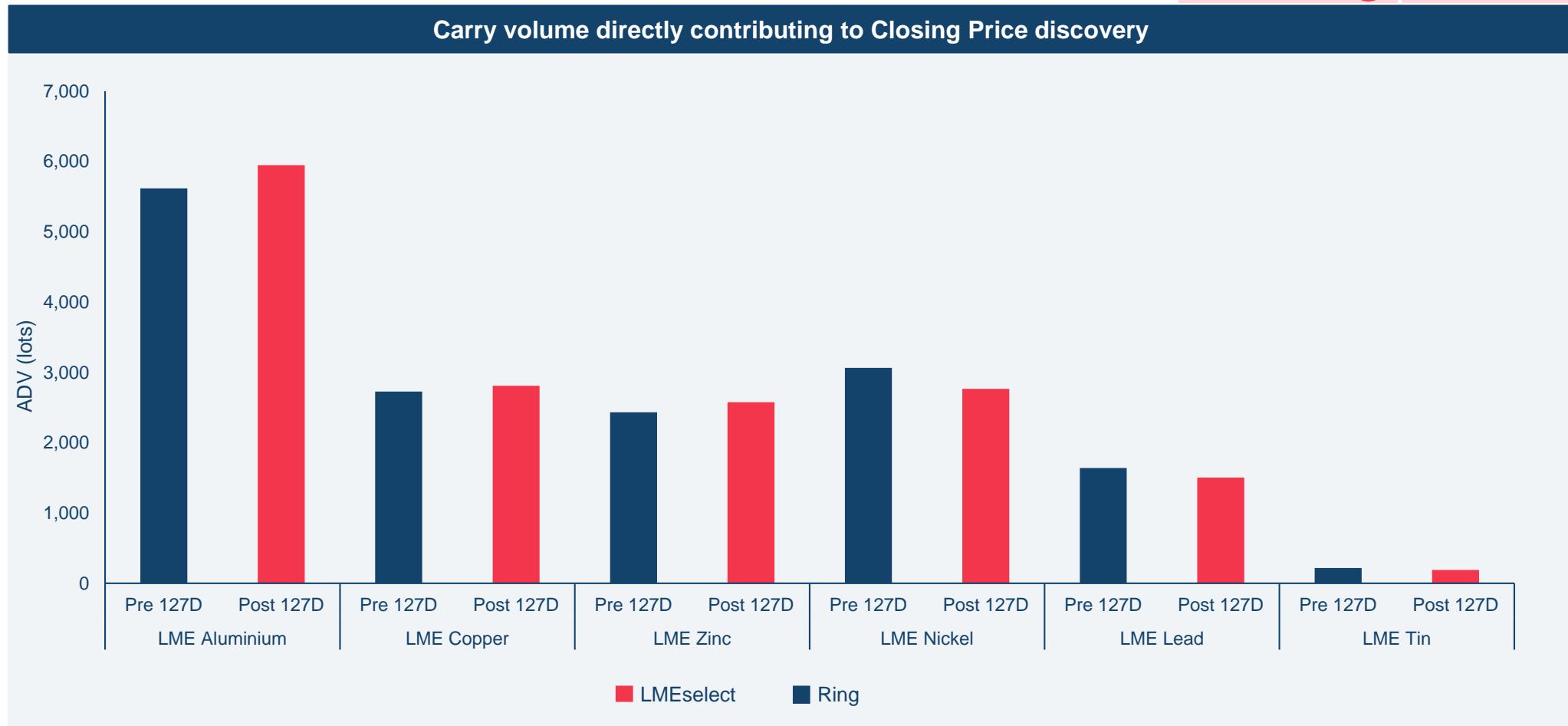
Prior to the Ring suspension, Basis Ring trades (with kerb 2 timecode) were booked throughout the day and therefore cannot be directly compared with the other volume which was specifically trading during the Closing Price discovery period.

- Basis Ring volumes with a kerb 2 timecode for period 23 Sep 2019 to 20 Mar 2020 (127 days).



2 Carry volume directly contributing to Closing Price discovery

Methodology: A Carries



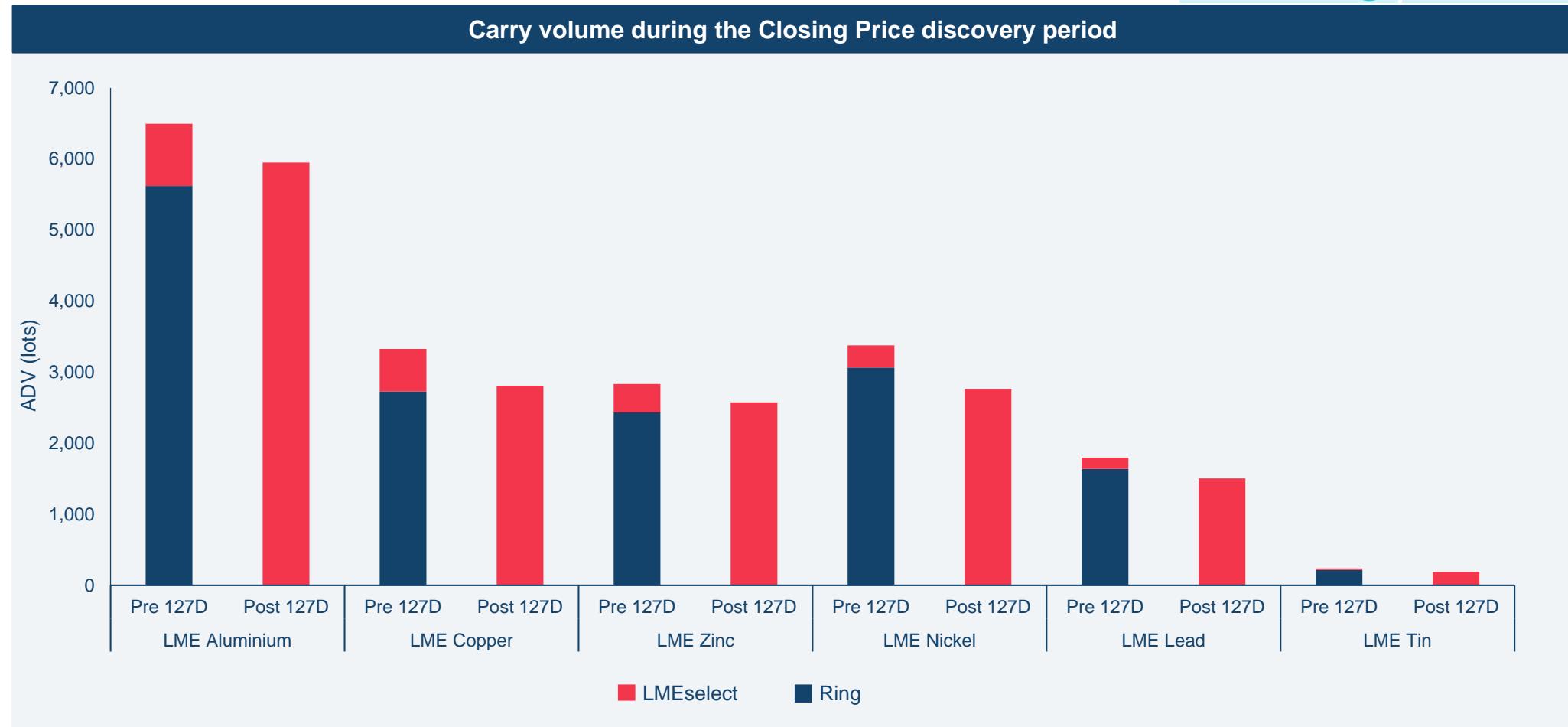
This analysis shows the carry volume **directly contributing to the Closing Price discovery process** and is therefore in the view of the LME the most relevant carry volume data to use as part of any assessment of the representativeness and robustness of the Closing Price discovery process.

- Pre 127D: The period when the Ring was open – 23 Sep 2019 to 20 Mar 2020 (127 days), after kerb was extended to 10 mins per metal. All Ring volume during kerb 2 is included.
- Post 127D: The period when the Ring was suspended – 12 Jun 2020 to 9 Dec 2020 (127 days) – 10 min closing period for each metal.



2 Carry volume during the Closing Price discovery period

Methodology: **B** Carries



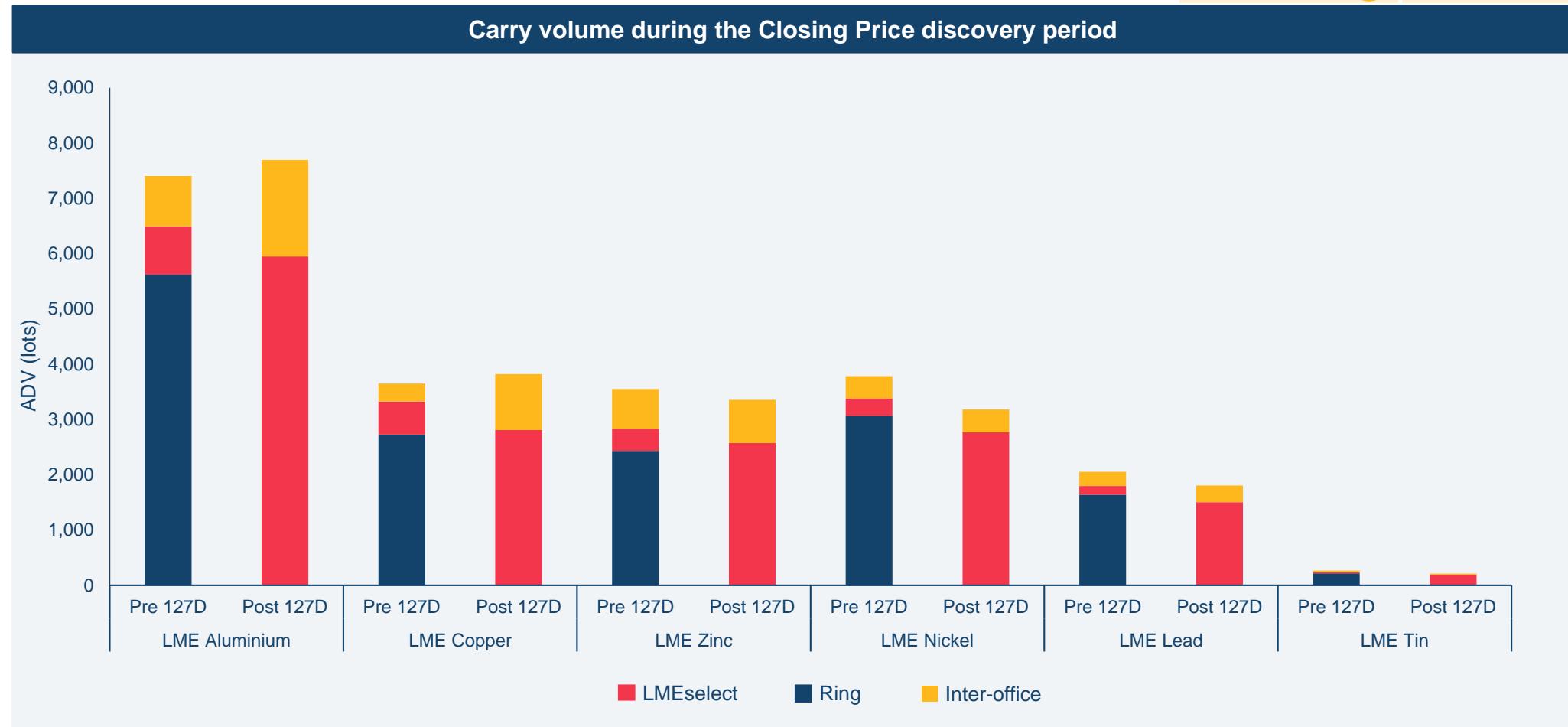
Prior to the Ring suspension, LMEselect volume that traded during the Closing Price window **did not directly contribute towards price discovery** therefore in the view of the LME should not be included in an assessment of the representativeness and robustness of the Closing Price discovery process.

- Pre 127D: The period when the Ring was open – 23 Sep 2019 to 20 Mar 2020 (127 days), after kerb was extended to 10 mins per metal. All Ring volume during kerb 2 is included. LMEselect volumes use the respective 10 min closing period for each metal.
- Post 127D: The period when the Ring was suspended – 12 Jun 2020 to 9 Dec 2020 (127 days) – 10 min closing for each metal.



2 Carry volume during the Closing Price discovery period

Methodology: C Carries



LMEselect volume that traded during the Closing Price window prior to the Ring suspension, and inter-office volume before or after Ring suspension **did not directly contribute towards price discovery** therefore in the view of the LME should not be included in an assessment of the representativeness nor of the robustness of the Closing Price discovery process.

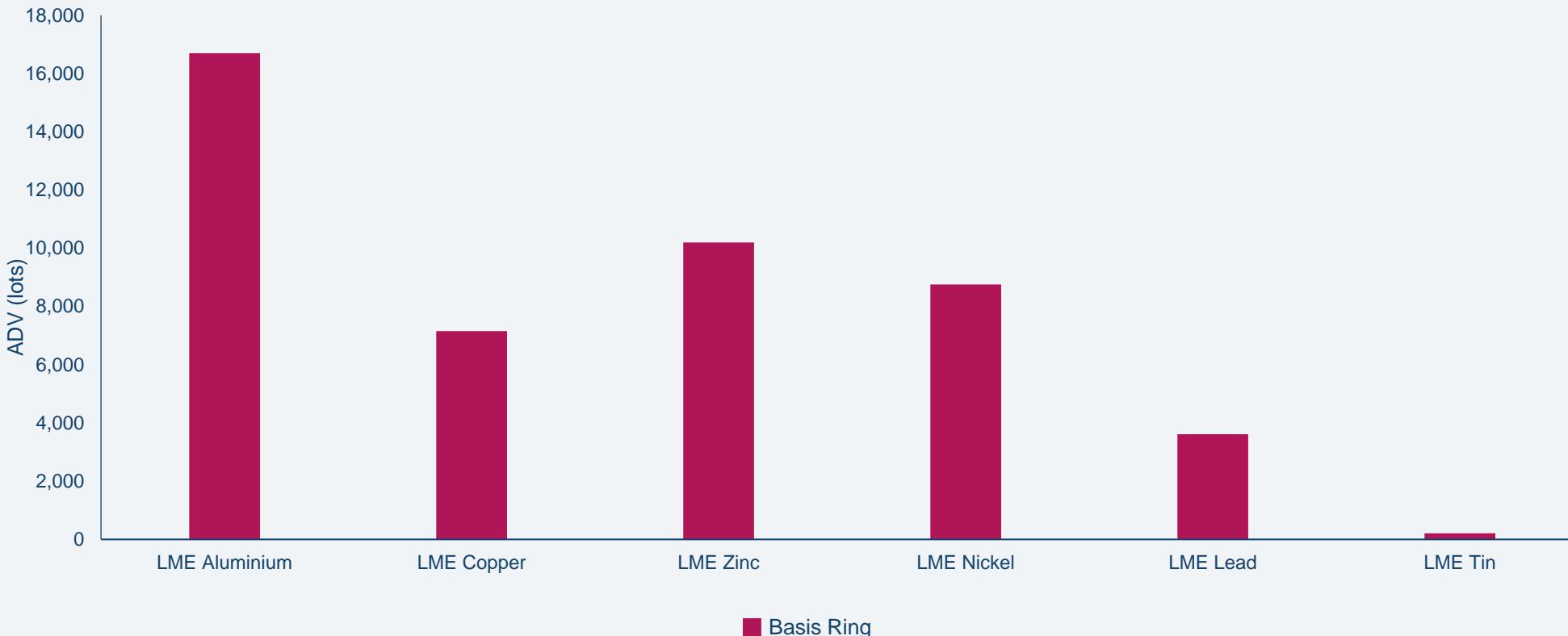
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- Post 127D: The period when the Ring was suspended – 12 Jun 2020 to 9 Dec 2020 (127 days) – 10 min closing period for each metal. Inter-office uses the same 10 min period.



2 Carry Basis Ring volume referencing the Closing Price discovery period

Methodology: **D** | Carries

Carry Basis Ring volume referencing the Closing Price discovery period



Prior to the Ring suspension, Basis Ring trades (with kerb 2 timecode) were booked throughout the day and therefore cannot be directly compared with the other volume which was specifically trading during the Closing Price discovery period (10 minute window immediately prior to the close).

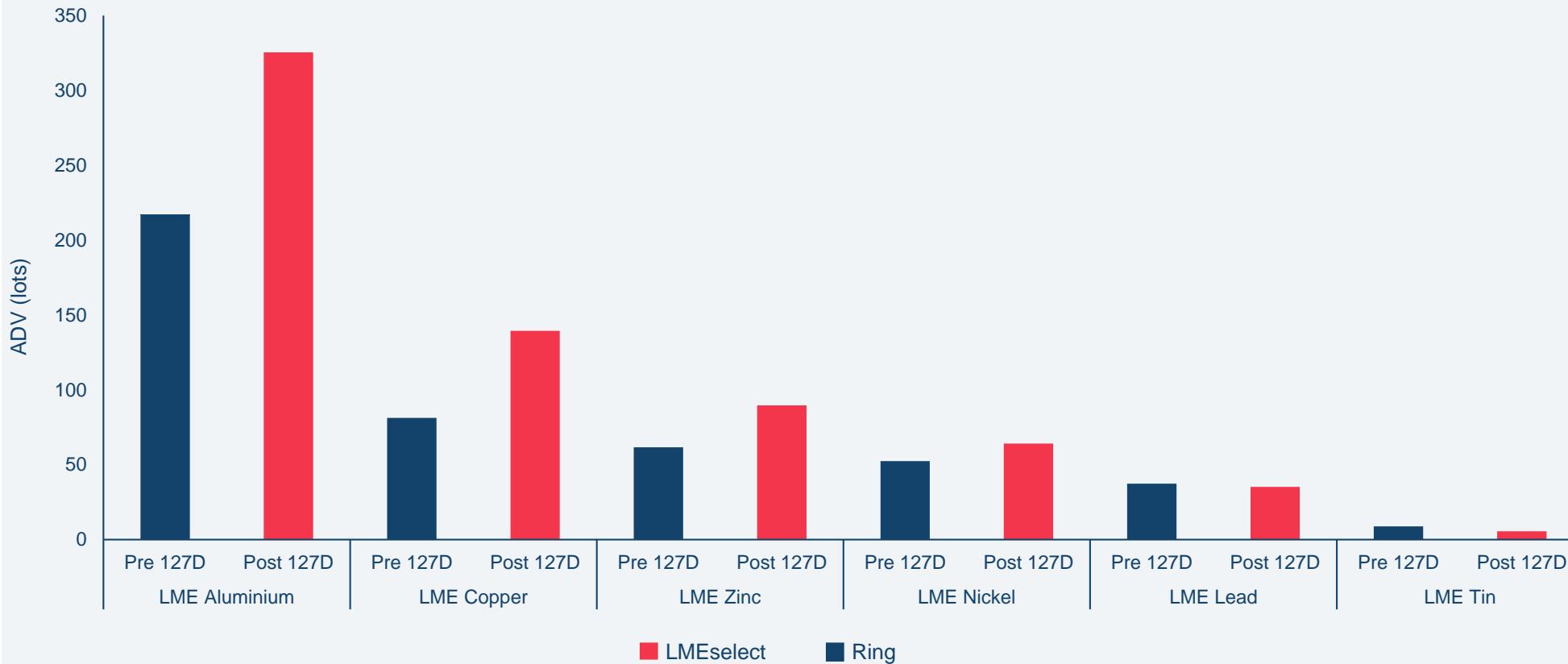
- Basis Ring volumes with a kerb 2 timecode for period 23 Sep 2019 to 20 Mar 2020 (127 days)



Cash volume directly contributing to Official Price discovery

Methodology: A Cash outright

Cash volume directly contributing to Official Price discovery



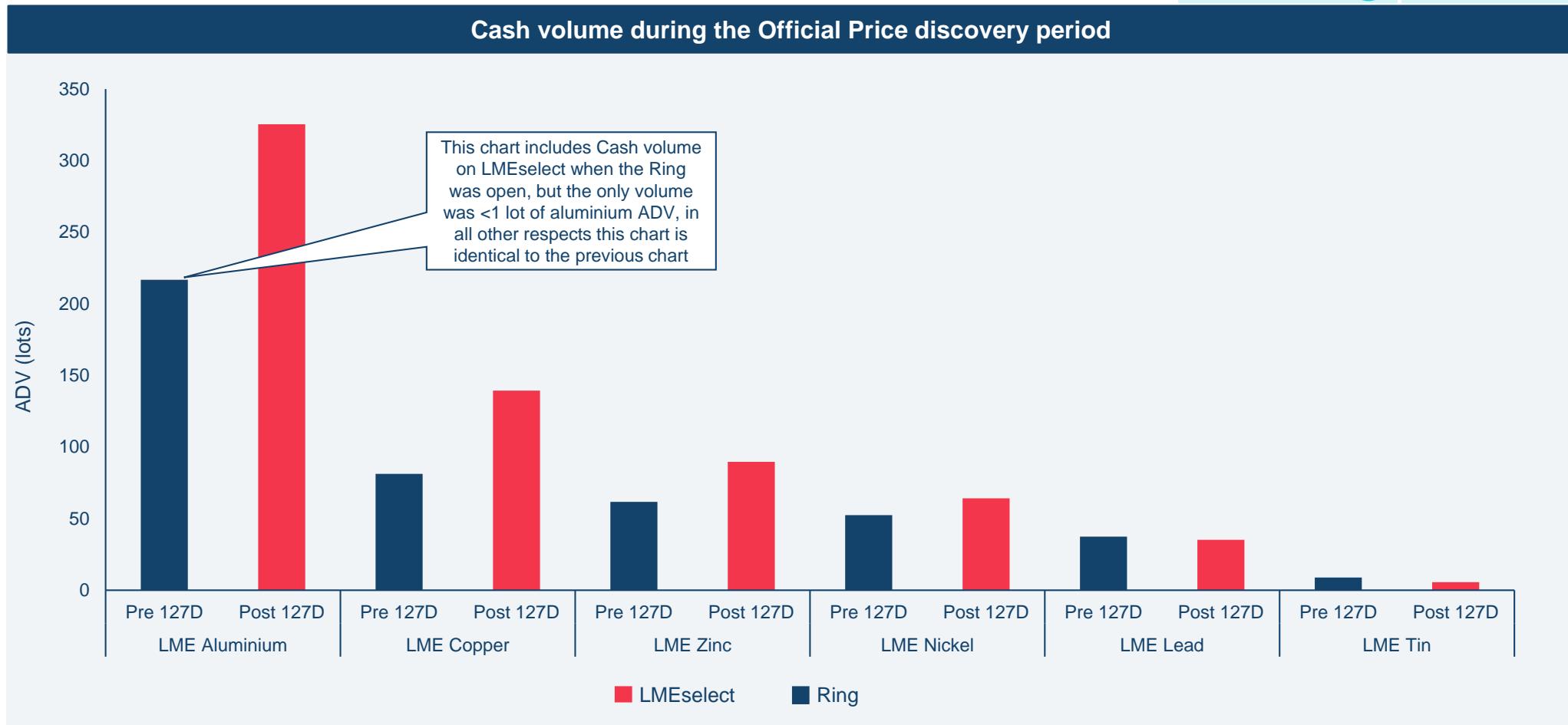
This analysis shows the **volume directly contributing to Official Price discovery** for the Cash prompt date. In the view of the LME this is therefore the most relevant dataset to use in an assessment of the representativeness or of the robustness of the Official Price process.

- Pre 127D: The period when the Ring was open – 23 Sep 2019 to 20 Mar 2020 (127 days), after kerb was extended to 10 mins per metal. All Ring volume during Ring 2 is included.
- Post 127D: The period when the Ring was suspended – 12 Jun 2020 to 9 Dec 2020 (127 days) – 5 min VWAP period for each metal.



2 Cash volume during the Official Price discovery period

Methodology: **B** Cash outright



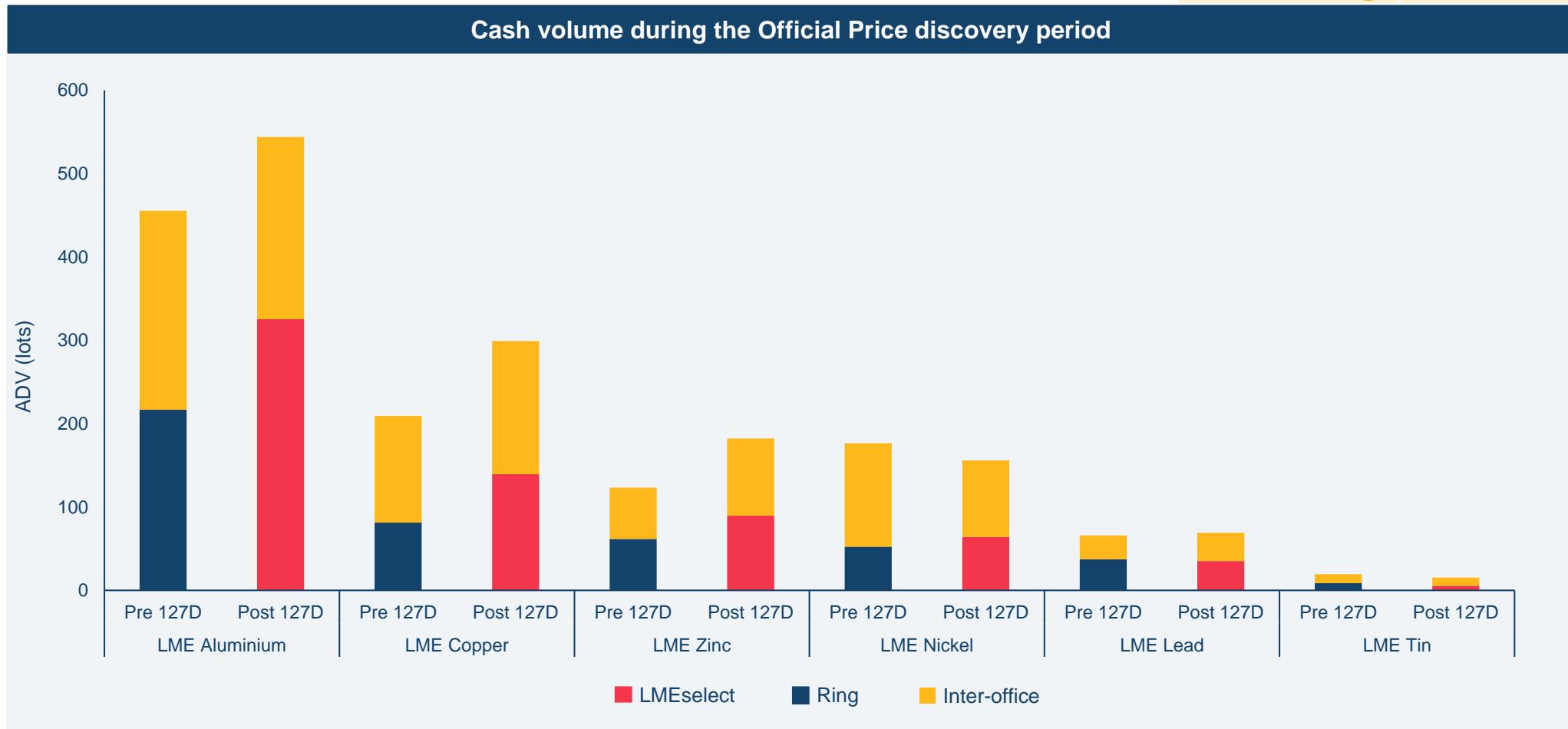
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2 Cash volume during the Official Price discovery period

Methodology: C Cash outright



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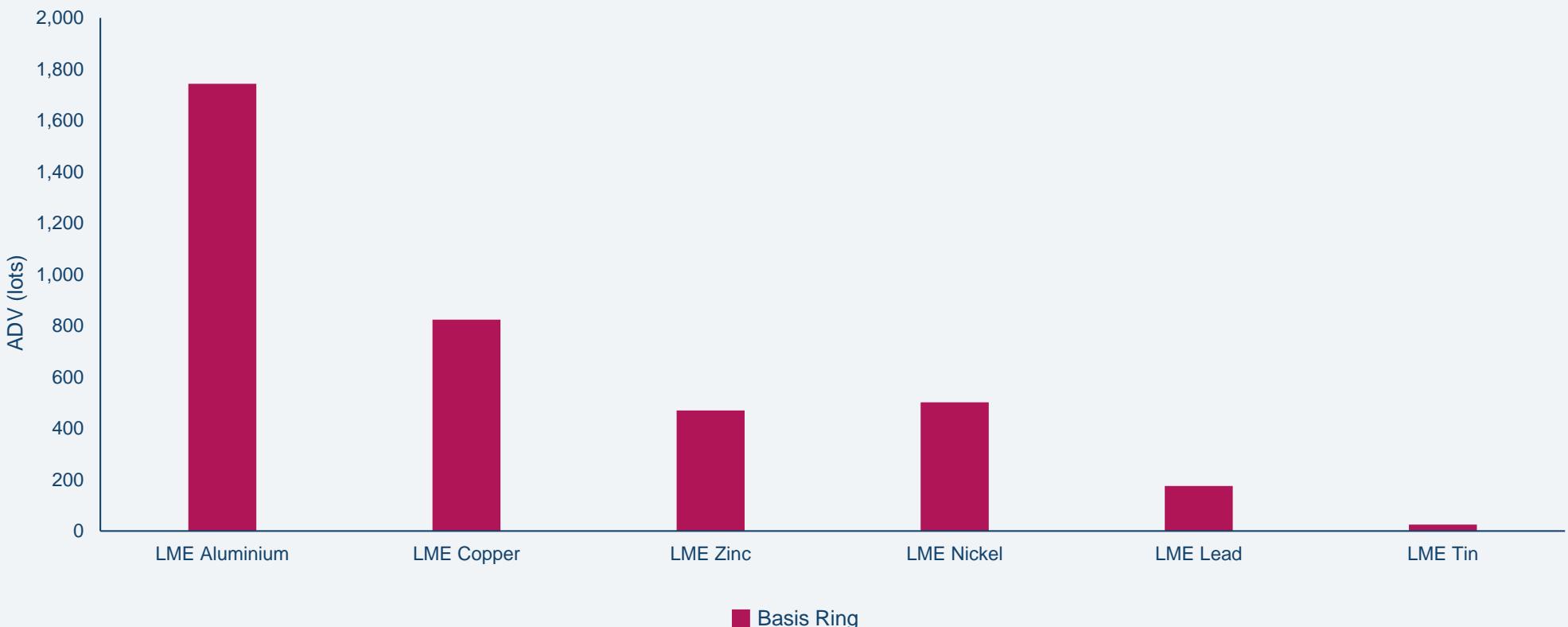
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2 Cash Basis Ring volume referencing the Official Price discovery period

Methodology: **D** Cash outright

Cash Basis Ring volume referencing the Official Price discovery period



Prior to the Ring suspension, Basis Ring trades (with Ring 2 timecode) were booked throughout the day and therefore cannot be directly compared with the other volume which was specifically traded during the Official Price discovery period (5 minute window immediately prior to the Ring 2 close).

- Basis Ring volumes with a Ring 2 timecode for period 23 Sep 2019 to 20 Mar 2020 (127 days).



Participation in the price discovery process

What is the dataset?

- Data on number of participants directly accessing the pricing process during the Ring and then during the VWAP during the period of Ring suspension.
- For electronic access, a tag (58) on the order message is used as a proxy to identify participants.
- The data only includes participants that traded during the relevant pricing period.
- The data also includes the number of days (out of 127 for both periods) for which there were no trades recorded during the relevant pricing period.

Key considerations

- Some trading firms may have multiple tag 58s, and each tag 58 may represent multiple individual traders. As such this data does not perfectly represent the number of individual traders or firms trading during the pricing period.
- There are 9 Category 1 members on the Ring, therefore the maximum number of individual traders in any Ring session is 9. The LME does not limit the number of Category 1 members but each member is limited to having a single trader trading in the Ring at any one time.



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Direct participation in price discovery

Direct Ring participant numbers (23 Sep 2019 to 20 Mar 2020 – 127 days)						
3-month Closing Price						
	Aluminium	Copper	Nickel	Lead	Tin	Zinc
Average	4	4	5	4	3	4
Min	0	0	2	0	0	0
Max	8	7	9	9	7	9
# days with no trades	1	7	0	5	5	2
Cash Official Price						
	Aluminium	Copper	Nickel	Lead	Tin	Zinc
Average	4	3	3	3	2	3
Min	0	0	0	0	0	0
Max	9	8	8	7	6	8
# days with no trades	12	12	10	24	24	19

Direct LMEselect participant numbers (12 Jun 2020 to 9 Dec 2020 – 127 days)						
3-month Closing Price						
	Aluminium	Copper	Nickel	Lead	Tin	Zinc
Average	46	42	38	39	8	51
Min	25	21	22	17	0	23
Max	78	84	67	69	32	97
# days with no trades	0	0	0	0	3	0
Cash Official Price						
	Aluminium	Copper	Nickel	Lead	Tin	Zinc
Average	5	4	3	3	2	4
Min	2	1	1	0	0	1
Max	10	9	7	7	5	8
# days with no trades	0	0	0	8	10	0

- Direct participation in the VWAP is measured as the number of tag 58s (a unique electronic identifier) trading during the VWAP period. As such, it may record multiple traders within each trading firm.



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