Insight INVESTMENT

DECEMBER 2021

CONSULTATION RESPONSE
REVIEW OF MARGINING PRACTICES

DRAFT. PENDING APPROVAL

OVERVIEW OF INSIGHT'S POSITION

We would commend the goals of this consultation and the level of detail that has been included in the report, however, we would note our concern that the way in which the survey was conducted it is likely to result in an under-representation from buy-side firms. The initial period for responses was tight, with a short deadline, and the subsequent extensions both had similar tight deadlines.

Although we agree with the broad findings of the report, we believe that there are some issues that require greater attention.

Excess pressure for cash

In periods of high volatility, the demand for cash from variation margin calls will spike for both banking and non-bank entities. During these periods the repo markets will have an important role to play, helping to transform high quality collateral into cash, which may be necessary to help meet margin calls. Without a well-functioning repo market, firms that are asset rich but do not have sufficient cash to meet margin calls could be at risk.

In the case of non-banking entities, the first layer of protection will be to hold excess cash to meet potential variation margin calls, However, many prudent non-banking entities will be restricted in the amount of excess cash they will be willing to hold because of the increased risk this may pose to them, and it may also not fit the business function that they are aiming to fulfil.

The perception that cash is a riskless asset is a misperception for non-bank entities. Many non-banking entities would prefer to hold high quality government bonds over cash because cash ultimately introduces non-sovereign credit risk to them. Non-banking entities cannot deposit cash with a central bank, and instead hold cash as bank deposits or other short-term financial instruments, introducing non-sovereign credit risk. This increased risk, along with the need to deploy resources in a manner that fits the business of the entity, can limit the amount of excess cash that can be held by non-banks acting in a prudent manner.

Therefore, for these entities the repo markets play an important role in helping to facilitate collateral transformation of high-quality government bonds into cash. Indeed, the March/April 2020 period showed the importance of repo markets in allowing all market participants – both bank and non-bank – to meet their liquidity needs. We recognise that there will always be periods of volatility, and that during these periods the best way to avoid a liquidity crisis is to facilitate collateral transformation.

Access to repo markets is still primarily intermediated by banking entities, partly because of the important role that banks play in the market given their access to central banks. However, during periods of crisis banks tend to look inwards, shrinking their balance sheets and often reducing their support of non-banking entities, just as the demand for their services increases. The International Capital Market Association, in their 2020 report: The European repo market and the COVID-19 crisis[1], noted that during the COIVID crisis the demand for repo increased by both banking and non-banking entities. It goes onto describe that while the overall amount of repo activity increased in the market, the experience of the interbank repo market was very different to the repo market that was accessible to the buyside entities and that there were strains in the market. In particular the increase demand for cash from the repo markets by buyside were not met by the supply from the banks. We provide a few quotes from the report:

"In particular, as the demand for repo has increased, banks' capacity to intermediate has remained constrained."

"While the demand to access the repo market increased during the height of the crisis, banks' capacity to intermediate that access did not. Buy-side participants report an increased reliance on the repo market as fund outflows drove the need to generate cash against holdings, as well as to meet margin calls against derivatives positions as volatility increased. However, it would seem that banks struggled to keep pace with client demand"

[1] https://www.icmagroup.org/assets/documents/Regulatory/Repo/The-European-repo-market-and-the-COVID-19-crisis-April-2020-210420.pdf

We believe that the consultation report does not fully take into account the problems that occurred in the repo markets during the March/April 2020, and in particular the experience of the buyside. With this in mind, we propose some policy consideration to help alleviate the impact from increased demand for cash (or 'dash for cash' as it has also been described) for all market participants.

1. **Bank capital rules:** Global regulators could consider whether the bank capital rules are calibrated appropriately to support a robust and well-functioning repo market. Banks need to be incentivised to support the functioning of repo markets in periods of market stress, allowing banks to act more fully as a transmission mechanism for central bank liquidity. Indeed, there have been some reports on the impact of bank capital rules on the repo market as set out in the footnote.[2]
2. **Support the development of repo-clearing for non-bank entities:** We encourage the participation of non-bank entities within cleared repo markets to maximise their access to the liquidity that repo markets provide. While this has started to happen, this is only available for larger clients and its use is limited due to the need to use a sponsored access clearing model which is only supported by a small number of clearing member service providers. We encourage further developments of this to allow more non-banking entities to be able to participate in cleared repo transactions and more banks to provide this sponsored clearing services to facilitate this.
3. **Reduce the demand for cash in stressed periods:** While variation margin must be in cash format for cleared trades due to operational reasons, we believe reducing the pressure for variation margin to have to be in cash in for non-cleared derivatives would be helpful to reduce the overall demand for cash in the market in stressed conditions. Currently, the lack of recognition of high-quality government bonds posted as variation margin for the purposes of leverage ratio rules[3] strongly incentivises banks to require variation margin in cash for non-cleared trades as well. We encourage global regulators re-consider this rule with the intention of brining greater financial stability to the markets in stressed periods.

Increase list of eligible collateral

We recognise that there will always be periods of volatility, and that during these periods CCPs will need the ability to increase initial margin to manage their risk. We support CCP initial margin models to ensure they meet some minimum standards to ensure that the models are robust, however we do not believe that initial margin should be "gold-plated" in normal conditions with the intention of trying to stop initial margin increases in stressed conditions. CCPs and their supervisors will always want the ability for CCPs to increase initial margin in stressed conditions.

We believe a better approach to address this would be to reduce the impact of initial margin increases by ensuring the list of CCP eligible collateral is expanded.

By allowing CCPs to accept a wider range of eligible collateral (with a suitable haircut), it would reduce the chances of a crisis resulting from an initial margin spike as firms will more likely be able meet the margin calls. The list of eligible sovereign bond issues should be expanded: currently we are aware of certain smaller issuance of sovereign bonds not being within the CCP eligible list of collateral, even though larger issues of the same sovereign are included. In general policymakers could consider widening the list to include non sovereign collateral as well, starting first with more agencies and certain money market funds, but also potentially expanding beyond that so long as an appropriate haircut is applied to reflect the risk.

Other points

- The report also notes that non-cleared markets were more robust than cleared markets, demonstrating lower volatility and cyclicality. We would point out that many of our clients are not yet in scope for initial margin requirements for non-cleared derivatives and will only come into scope from 1 September 2022. This could have a considerable impact on future findings. We support the non-cleared margin rules – relating to both initial and variation margin - being more stable in stressed conditions and would caution against changes in regulation that increases the risk sensitivity of these models which would inevitably increase procyclicality risk. As evidenced by the report the non-cleared markets currently provide some stability to the market and we are keen to ensure that stability that it provides is maintained.

- It is important to note that the March/April 2020 liquidity crisis was not as a result of the non-banking sector and that many of the issues that occurred can be significantly improved by well-functioning markets and proposed policy suggestions along the lines we have outlined above. We do not believe that further liquidity disclosures or metrics are needed for the NBFI sector.

[2] Note Bank of England report below states that "*Liquidity in core repo markets has dropped, costs faced by some agents have increased and a weakening of repo market functioning has been reported (Bank of England, 2016; Duffie, 2016; CGFS, 2017). It is argued that Basel III regulatory reforms, most notably the leverage ratio, played an important role in this (Duffie, 2016; CGFS, 2017).*"
Bank of England, Staff Working Paper No 746 on "Repo market functioning: the role of capital regulation", August 2018

[3] Page 155; Paragraph 2 of "Annex: leverage ratio" of Basel III finalising post-crisis reforms, December 2017, BCBS424

The NBFI sector represents a diverse set of institutions, which will make it difficult for a single set of standards to work across the sector as a whole. The NBFI sector also already falls under the scope of a variety of different regulators depending on the sub-sector. We would encourage the focus of any proposals to be focused on (i) increasing the liquidity of underlying repo markets to ensure that the system as a whole is more robust, (ii) reducing excess reliance on cash for variation margin particularly in the non-cleared markets, and (iii) to increase the list of eligible collateral.

QUESTION 1: Does the report accurately describe the key market events of the Covid-related period of stress from February to April 2020 and its effects on the magnitude and frequency of the calculation and payment of margin in centrally and non-centrally cleared markets? If not, in what ways are the descriptions not fully representative of the events? Are there any other important events or effects missing? If so, please provide any information or data that are relevant to the missing events or effects to the extent feasible.

We do not believe that the report fully takes into account the problems that non-bank entities faced sourcing liquidity during the March/April 2020 crisis. The report suggests that repo market demand was met with supply, but we do not believe this is entirely accurate. The experience of the interbank repo market was very different to the repo market that was accessible to the buyside entities. Many banks pulled back on their balance sheet availability exactly when the demand for cash from non-bank entities increased.

The International Capital Market Association, in their 2020 report: The European repo market and the COVID-19 crisis[4], noted that during the COIVID crisis the demand for repo increased by both banking and non-banking entities. It goes onto describe that while the overall amount of repo activity increased in the market, the experience of the interbank repo market was very different to the repo market that was accessible to the buyside entities and that there were strains in the market. In particular the increase demand for cash from the repo markets by the buyside were not met by the supply from the banks. We provide a few quotes from the report:

"In particular, as the demand for repo has increased, banks' capacity to intermediate has remained constrained."

"While the demand to access the repo market increased during the height of the crisis, banks' capacity to intermediate that access did not. Buy-side participants report an increased reliance on the repo market as fund outflows drove the need to generate cash against holdings, as well as to meet margin calls against derivatives positions as volatility increased. However, it would seem that banks struggled to keep pace with client demand"

During periods of crisis banks tend to look inwards, shrinking their balance sheets in order to protect their own regulatory metrics. Insight believes that a robustly functioning repo market is critical to ensure that markets function smoothly during periods of stress and that bank capital rules need to be examined to ensure that banks are incentivised to provide liquidity to repo markets during these periods. We propose further solutions to address this outlined in the executive summary above.

QUESTION 2: Does the report draw appropriate conclusions from the presented observations and analysis of the various aspects of centrally and non-centrally cleared margin during the 2020 stress period? If not, in what cases do you feel the conclusions are not justified by the included analysis? Are there any areas or specific topics of analysis you consider to be missing? If so, please provide any information or data that are relevant to the extent feasible. Please set out your views across the following sections:

a. The drivers of margin calls during the period of market stress covered by the report.

b. The current level of transparency in margin practices by CCPs and intermediaries.

c. The preparedness of intermediaries and clients for meeting the increased margin calls seen during the period of market stress covered by the report.

d. The relationship between margin demands and other liquidity demands during the period February–April 2020.

As explained in the executive summary of this response, we believe that more emphasis needs to be placed on finding solutions that reduce the demand for cash during periods of crisis and to ensure greater reliability of collateral transformation services such as the repo markets.

For non-bank entities, holding excess cash in anticipation of future volatility is not without risk. Excess cash can't be deposited with a central bank, as is the case with banks, and instead hold cash as bank deposits or other short-term financial instruments, introducing credit risk. The perception that cash is a riskless asset is a misperception for non-bank entities, and this limits the amount of excess cash that can be held. The recognition of high-quality government bonds as collateral for variation margin for the purposes of leverage ratio rules in non-cleared derivatives would also remove an element of the demand for cash during crisis periods, relieving pressure on financial markets.

---

[4] https://www.icmagroup.org/assets/documents/Regulatory/Repo/The-European-repo-market-and-the-COVID-19-crisis-April-2020-210420.pdf

The report also notes that non-cleared markets were more robust than cleared markets, demonstrating lower volatility and cyclicality. We would point out that many of our clients are not yet in scope for initial margin requirements for non-cleared derivatives and will only come into scope from September 2022. This could have a considerable impact on future findings. We would caution against changes in regulation that increase the cyclicality of non-cleared markets and encourage changes that increase the stability of cleared markets.

QUESTION 3: Do you agree with the proposals for further international work regarding good practices, metrics and disclosures concerning procyclicality in CCP IM models? Are there other aspects of CCP IM where additional disclosures should be prioritised for further work?

As set out in the executive summary above:

We recognise that there will always be periods of volatility, and that during these periods CCPs will need the ability to increase initial margin to manage their risk. We support CCP initial margin models to ensure they meet some minimum standards to ensure that the models are robust, however we do not believe that initial margin should be "gold-plated" in normal conditions with the intention of trying to stop initial margin increases in stressed conditions. CCPs and their supervisors will always want the ability for CCPs to increase initial margin in stressed conditions.

We believe a better approach to address this would be to reduce the impact of initial margin increases by ensuring the list of CCP eligible collateral is expanded.

By allowing CCPs to accept a wider range of eligible collateral (with a suitable haircut), it would reduce the chances of a crisis resulting from an initial margin spike as firms will more likely be able meet the margin calls. The list of eligible sovereign bond issues should be expanded: currently we are aware of certain smaller issuance of sovereign bonds not being within the CCP eligible list of collateral, even though larger issues of the same sovereign are included. In general policymakers could consider widening the list to include non sovereign collateral as well, starting first with more agencies and certain money market funds, but also potentially expanding beyond that so long as an appropriate haircut is applied to reflect the risk.

QUESTION 4: Does the report identify appropriate aspects of transparency in centrally and non-centrally cleared markets for further international work, including identifying data gaps, enhancing disclosures to clearing members and increasing margin model transparency? a. What specific areas of transparency would be most helpful? What (if any) are the barriers to providing those points of transparency? b. Should any other areas of increased transparency be considered?

As set out in the executive summary above:

The report notes that non-cleared markets were more robust than cleared markets, demonstrating lower volatility and cyclicality. We would point out that many of our clients are not yet in scope for initial margin requirements for non-cleared derivatives and will only come into scope from 1 September 2022. This could have a considerable impact on future findings. We support the non-cleared margin rules – relating to both initial and variation margin - being more stable in stressed conditions and would caution against changes in regulation that increases the risk sensitivity of these models which would inevitably increase procyclicality risk. As evidenced by the report the non-cleared markets currently provide some stability to the market and we are keen to ensure that stability that it provides is maintained.

QUESTION 5: Do you agree with the proposals for further international work to enhance liquidity preparedness in the NBFI sector, including the development of appropriate liquidity metrics and disclosures, analysis of liquidity provision robustness and expanded information sharing between intermediaries and clients? Have the proposals identified all key aspects of NBFI sector liquidity preparedness which should be included?

As set out in the executive summary above:

It is important to note that the March/April 2020 liquidity crisis was not as a result of the non-banking sector and that many of the issues that occurred can be significantly improved by well-functioning markets and relatively minor regulatory changes along the lines we have outlined in the executive summary above. We do not believe that further liquidity disclosures or metrics are needed for the NBFI sector. The NBFI sector represents a diverse set of institutions, which will make it difficult for a single set of standards to work across the sector as a whole. The NBFI sector also already falls under the scope of a variety of different regulators depending on the sub-sector. We would encourage the focus of any proposals to be focused on (i) increasing the liquidity of underlying repo markets to ensure that the system as a whole is more robust, (ii) reducing excess reliance on cash for variation margin particularly in the non-cleared markets, and (iii) to increase the list of eligible collateral. This is further explained in our executive summary above.

QUESTION 6: Do you agree with the proposals for further international work to evaluate data gaps in regulatory reporting by banks and non-banks? Are there particular data gaps you would identify as being of material importance? If so, please provide any supporting information and data to the extent feasible.

We do not believe this is necessary. We believe sufficient reporting from both EMIR (in Europe) or Dodd-Frank (in US) as well as regulation covering the specific institutions already captures this. We propose other solutions in our executive summary above.

QUESTION 7: Does the report identify appropriate proposals for further international work on streamlining VM processes in centrally and non-centrally cleared markets? Should any other aspects of VM processes be included in this work

No comment.

QUESTION 8: Does the report identify appropriate proposals for further international work on the degree and nature of the responsiveness of CCP IM models to market stress? Should any other aspects of CCP margin models be included in this initiative?

As set out in the executive summary above:

We recognise that there will always be periods of volatility, and that during these periods CCPs will need the ability to increase initial margin to manage their risk. We support CCP initial margin models to ensure they meet some minimum standards to ensure that the models are robust, however we do not believe that initial margin should be "gold-plated" in normal conditions with the intention of trying to stop initial margin increases in stressed conditions. CCPs and their supervisors will always want the ability for CCPs to increase initial margin in stressed conditions.

We believe a better approach to address this would be to reduce the impact of initial margin increases by ensuring the list of CCP eligible collateral is expanded.

By allowing CCPs to accept a wider range of eligible collateral (with a suitable haircut), it would reduce the chances of a crisis resulting from an initial margin spike as firms will more likely be able meet the margin calls. The list of eligible sovereign bond issues should be expanded: currently we are aware of certain smaller issuance of sovereign bonds not being within the CCP eligible list of collateral, even though larger issues of the same sovereign are included. In general policymakers could consider widening the list to include non sovereign collateral as well, starting first with more agencies and certain money market funds, but also potentially expanding beyond that so long as an appropriate haircut is applied to reflect the risk.

QUESTION 9: Do you agree with the proposals in the report to evaluate the degree and nature of responsiveness of non-centrally cleared IM models to market stresses, remediation of IM shortfalls and the level of disclosure of non-centrally cleared IM model performance? Should any other aspects of non-centrally cleared IM models be included in this initiative?

As set out in the executive summary above:

The report notes that non-cleared markets were more robust than cleared markets, demonstrating lower volatility and cyclicality. We would point out that many of our clients are not yet in scope for initial margin requirements for non-cleared derivatives and will only come into scope from September 2022. This could have a considerable impact on future findings. We support the non-cleared margin rules – relating to both initial and variation margin - being more stable in stressed conditions and would caution against changes in regulation that increases the risk sensitivity of these models which would inevitably increase procyclicality risk. As evidenced by the report the non-cleared markets currently provide some stability to the market and we are keen to ensure that stability that it provides is maintained.

QUESTION 10: Are there any other important aspects not covered by the report which should also be prioritised for further international work or policy development?

As set out in the executive summary above:

Excess pressure for cash

In periods of high volatility, the demand for cash from variation margin calls will spike for both banking and non-bank entities. During these periods the repo markets will have an important role to play, helping to transform high quality collateral into cash, which may be necessary to help meet margin calls. Without a well-functioning repo market, firms that are asset rich but do not have sufficient cash to meet margin calls could be at risk.

In the case of non-banking entities, the first layer of protection will be to hold excess cash to meet potential variation margin calls, However, many prudent non-banking entities will be restricted in the amount of excess cash they will be willing to hold because of the increased risk this may pose to them, and it may also not fit the business function that they are aiming to fulfil.

The perception that cash is a riskless asset is a misperception for non-bank entities. Many non-banking entities would prefer to hold high quality government bonds over cash because cash ultimately introduces non-sovereign credit risk to them. Non-banking entities cannot deposit cash with a central bank, and instead hold cash as bank deposits or other short-term financial instruments, introducing non-sovereign credit risk. This increased risk, along with the need to deploy resources in a manner that fits the business of the entity, can limit the amount of excess cash that can be held by non-banks acting in a prudent manner.

Therefore, for these entities the repo markets play an important role in helping to facilitate collateral transformation of high-quality government bonds into cash. Indeed, the March/April 2020 period showed the importance of repo markets in allowing all market participants – both bank and non-bank – to meet their liquidity needs. We recognise that there will always be periods of volatility, and that during these periods the best way to avoid a liquidity crisis is to facilitate collateral transformation.

Access to repo markets is still primarily intermediated by banking entities, partly because of the important role that banks play in the market given their access to central banks. However, during periods of crisis banks tend to look inwards, shrinking their balance sheets and often reducing their support of non-banking entities, just as the demand for their services increases. The International Capital Market Association, in their 2020 report: The European repo market and the COVID-19 crisis[5], noted that during the COIVID crisis the demand for repo increased by both banking and non-banking entities. It goes onto describe that while the overall amount of repo activity increased in the market, the experience of the interbank repo market was very different to the repo market that was accessible to the buyside entities and that there were strains in the market. In particular the increase demand for cash from the repo markets by buyside were not met by the supply from the banks. We provide a few quotes from the report:

"In particular, as the demand for repo has increased, banks' capacity to intermediate has remained constrained."

"While the demand to access the repo market increased during the height of the crisis, banks' capacity to intermediate that access did not. Buy-side participants report an increased reliance on the repo market as fund outflows drove the need to generate cash against holdings, as well as to meet margin calls against derivatives positions as volatility increased. However, it would seem that banks struggled to keep pace with client demand"

We believe that the consultation report does not fully take into account the problems that occurred in repo markets during the March/April 2020, and in particular the experience of the buyside. With this in mind, we propose some policy consideration to help alleviate the impact from increased demand for cash (or 'dash for cash' as it has also been described) for all market participants.

4. **Bank capital rules:** Global regulators could consider whether the bank capital rules are calibrated appropriately to support a robust and well-functioning repo market. Banks need to be incentivised to support the functioning of repo markets in periods of market stress, allowing banks to act more fully as a transmission mechanism for central bank liquidity. Indeed there have been some reports on the impact of bank capital rules on the repo market as set out in the footnote.[6]
5. **Support the development of repo-clearing for non-bank entities:** We encourage the participation of non-bank entities within cleared repo markets to maximise their access to the liquidity that repo markets provide. While this has started to happen, this is only available for larger clients and its use is limited due to the need to use a sponsored access clearing model which is only supported by a small number of clearing member service providers. We encourage further developments of this to allow more non-banking entities to be able to participate in cleared repo transactions and more banks to provide this sponsored clearing services to facilitate this.
6. **Reduce the demand for cash in stressed periods:** While variation margin must be in cash format for cleared trades due to operational reasons, we believe reducing the pressure for variation margin to have to be in cash in for non-cleared derivatives

[5] https://www.icmagroup.org/assets/documents/Regulatory/Repo/The-European-repo-market-and-the-COVID-19-crisis-April-2020-210420.pdf

[6] Note Bank of England report below states that "*Liquidity in core repo markets has dropped, costs faced by some agents have increased and a weakening of repo market functioning has been reported (Bank of England, 2016; Duffie, 2016; CGFS, 2017). It is argued that Basel III regulatory reforms, most notably the leverage ratio, played an important role in this (Duffie, 2016; CGFS, 2017).*"
Bank of England, Staff Working Paper No 746 on "Repo market functioning: the role of capital regulation", August 2018

would be helpful to reduce the overall demand for cash in the market in stressed conditions. Currently, the lack of recognition of high-quality government bonds posted as variation margin for the purposes of leverage ratio rules[7] strongly incentivises banks to require variation margin in cash for non-cleared trades as well. We encourage global regulators re-consider this rule with the intention of brining greater financial stability to the markets in stressed periods.

RISK DISCLOSURES

Past performance is not indicative of future results. Investment in any strategy involves a risk of loss which may partly be due to exchange rate fluctuations.

Any target performance aims are not a guarantee, may not be achieved and a capital loss may occur. Funds which have a higher performance aim generally take more risk to achieve this and so have a greater potential for the returns to be significantly different than expected.

Portfolio holdings are subject to change, for information only and are not investment recommendations.

FIND OUT MORE

Institutional Business Development
businessdevelopment@insightinvestment.com
+44 20 7321 1552

European Business Development
europe@insightinvestment.com
+49 69 12014 2650
+44 20 7321 1928

Consultant Relationship Management
consultantrelations@insightinvestment.com
+44 20 7321 1023

@InsightInvestIM
company/insight-investment
www.insightinvestment.com

IMPORTANT INFORMATION

[7] Page 155; Paragraph 2 of "Annex: leverage ratio" of Basel III finalising post-crisis reforms, December 2017, BCBS424

Index returns are for illustrative purposes only and are used in the context of our macro-economic models and analysis only. Returns cannot be linked to any fund or investment strategy and results do not represent or infer any links to actual fund or strategy performance. Index performance returns do not reflect any management fees, transaction costs or expenses. Indices are unmanaged and one cannot invest directly in an index.

Insight does not provide tax or legal advice to its clients and all investors are strongly urged to seek professional advice regarding any potential strategy or investment.

References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. They should not be relied upon as recommendations to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice.

The information and opinions are derived from proprietary and non-proprietary sources deemed by Insight Investment to be reliable, are not necessarily all-inclusive and are not guaranteed as to accuracy. As such, no warranty of accuracy or reliability is given and no responsibility arising in any other way for errors and omissions (including responsibility to any person by reason of negligence) is accepted by Insight Investment, its officers, employees or agents. Reliance upon information in this material is at the sole discretion of the reader.

Telephone conversations may be recorded in accordance with applicable laws.

For clients and prospects of Insight Investment Management (Global) Limited:
Issued by Insight Investment Management (Global) Limited. Registered in England and Wales. Registered office 160 Queen Victoria Street, London EC4V 4LA; registered number 00827982.

For clients and prospects of Insight Investment Funds Management Limited:
Issued by Insight Investment Funds Management Limited. Registered in England and Wales. Registered office 160 Queen Victoria Street, London EC4V 4LA; registered number 01835691.

For clients and prospects of Insight Investment Management (Europe) Limited:

Issued by Insight Investment Management (Europe) Limited. Registered office Riverside Two, 43-49 Sir John Rogerson's Quay, Dublin, D02 KV60. Registered in Ireland. Registered number 581405. Insight Investment Management (Europe) Limited is regulated by the Central Bank of Ireland. CBI reference number C154503.

For clients and prospects of Insight Investment International Limited:
Issued by Insight Investment International Limited. Registered in England and Wales. Registered office 160 Queen Victoria Street, London EC4V 4LA; registered number 03169281.

Insight Investment Management (Global) Limited, Insight Investment Funds Management Limited and Insight Investment International Limited are authorised and regulated by the Financial Conduct Authority in the UK. Insight Investment Management (Global) Limited and Insight Investment International Limited may operate in certain European countries in accordance with local regulatory requirements.

For clients and prospects based in Australia and New Zealand:
This material is for wholesale investors only (as defined under the Corporations Act in Australia or under the Financial Markets Conduct Act in New Zealand) and is not intended for distribution to, nor should it be relied upon by, retail investors.

Both Insight Investment Management (Global) Limited and Insight Investment International Limited are exempt from the requirement to hold an Australian financial services licence under the Corporations Act 2001 in respect of the financial services; and both are authorised and regulated by the Financial Conduct Authority (FCA) under UK laws, which differ from Australian laws. If this document is used or distributed in Australia, it is issued by Insight Investment Australia Pty Ltd (ABN 69 076 812 381, AFS License No. 230541) located at Level 2, 1-7 Bligh Street, Sydney, NSW 2000.

For clients and prospects of Insight North America LLC:
Insight North America LLC is a registered investment adviser under the Investment Advisers Act of 1940 and regulated by the US Securities and Exchange Commission. INA is part of 'Insight' or 'Insight Investment', the corporate brand for certain asset management companies operated by Insight Investment Management Limited including, among others, Insight Investment Management (Global) Limited, Insight Investment International Limited and Insight Investment Management (Europe) Limited (IIMEL).