

European Fixed Income Sales & Trading Credit Analytics

A Pragmatic Recapitalization of BKIR



May 2011

Overview

In My View, Ireland Needs to Undertake a Market-Based Recapitalization of Bank of Ireland

In my view, the Irish Government needs to undertake a market-based recapitalization of Bank of Ireland (“BKIR”) for the following reasons:

- Based on public statements, it is clear that the Irish Government strongly prefers BKIR’s recapitalization to be funded by the private sector; it therefore recognizes that its existing stake will be diluted
- Based on my understanding that the majority of the holders of BKIR common stock are retail investors who have already experienced significant dilution and loss of value, I think it a low probability that a recapitalization can be funded solely through their participation
- I think there is likely to be a significant shortfall without other external sources of funding, or further Government funding i.e. taxpayer participation to underwrite the shortfall
- In my view, the Irish Govt can and will raise capital through market-based means and will seek to tap the LT2 investor-base for an exchange offer into BKIR common stock, as well as new money as insurance against the potential shortfall referred to above
- In my view, this insurance pays off only if there is a demonstrable path to value, where an investment in BKIR LT2 can be seen as an attractive entry point through which to recreate exposure to BKIR’s post-recapitalization equity
- I believe that a market-based transaction has to be **on an arms-length basis and by definition, on market-clearing terms**
- I believe BKIR is unlikely to be the subject of a Subordinated Liabilities Order (“SLO”) because I do not believe there are the grounds for one

- I like BKIR LT2 securities because I believe that:
 - they are undervalued, and
 - BKIR will conduct a market-based capital-raising

Executive Summary

I believe that there are Significant Benefits to a Market-Based Recap of BKIR

In my view, “burden-sharing” is not a one-size-fits-all term that solely implies haircutting lenders. It encompasses alternatives to defray the recapitalization cost away from the Irish taxpayer. Market-based debt-for-equity swaps, where lenders are subordinated and assume greater risk of loss, are wholly consistent with burden-sharing and have significant advantages over more Draconian alternatives

- In my opinion, BKIR is very different to Allied Irish Bank (“AIB”) - as the politicians and regulators have repeatedly demonstrated and I see the financial data clearly supporting this
- Given the Irish Govt’s minority holding in BKIR, I believe that a **market-based recapitalization is the only appropriate (and defensible) option open to the Govt**
 - A market-based recapitalization for BKIR could make a significant contribution towards the Irish Govt’s goal of an aggregate €5-6bn of burden-sharing from subordinated creditors throughout the banking sector
- There are a number of legal considerations that I believe mean that the Govt can and should adopt a different approach towards recapitalizing BKIR, while still retaining recourse to an SLO as a fall-back, worst-case measure
- The Govt has to balance its broader policy goals with the need to complete the recapitalization of the banking sector. Broader policy includes creating an environment that quickly attracts external capital back to Ireland, into the Sovereign, corporate and financial sectors
 - I believe that use of legislation where it is actually not necessary, where it is perceived to be coercive and creates uncertainty through perceived “*moving of the goal posts*”, will not cultivate such an environment and is counter to the interests of the Sovereign and the Irish taxpayer
- Under appropriate terms, I believe that holders of €2.6bn of Subordinated Debt could be the source of a significant proportion, if not all, of the €1.6bn of additional capital required by BKIR. **No taxpayer money might be needed**
- With current prices of c.55-60% I believe, based on various assumptions (see later) of BKIR’s post-recapitalization equity value, that BKIR Subordinated Debt is undervalued

Source MS’ EU Distressed Credit Trading Desk market prices as at 16th May 2011

The information contained herein is not intended to be, and does not constitute, advice from Morgan Stanley. Morgan Stanley is not your advisor (municipal, financial or any other kind of advisor) and is not acting in a fiduciary capacity.

This information was prepared by Morgan Stanley sales, trading, banking or other non-research personnel. This is not a research report and the views or information contained herein should not be viewed as independent of the interests of Morgan Stanley trading desks.

To the extent any prices or price levels are noted, they are for informational purposes only and are not intended for use by third parties, and are indicative as of the date shown and are not a commitment by Morgan Stanley to trade at any price. Please see additional important information and qualifications at the end of this material.

Potential Costs of a Market-Based Solution and SLO

Based on the Government's Own Words....

"...the Government's aim is to minimize taxpayers' exposure to debts that have been incurred in the past by private banks that are now predominantly owned by the State and also ensure that we have a flow of funds..."

– Simon Coveney, Minister for Agriculture, Food & Marine quoted on Bloomberg, March 28th 2011

Market-based Solution – My View of Potential Costs

- I assume that Subordinated Debt holders are the sole source of fresh capital and that:
 - Subordinated Debt holders are likely to participate in a market-based debt-equity swap that raises €26bn of capital
 - 90%-100% participation is axiomatic given the assumed market-clearing nature of the execution
 - Subordinated bondholders participate **at least 50%** in the additional €1.6bn equity raise
- **Potential cost to Government: c.€800mm-€930mm**

SLO/Cash Tender Offer – My View of Potential Costs

- I assume that in combination with a SLO, the LT2s are exchanged at 50% (10% price discount, in line with AIB pricing) and T1/UT2 exchange at 32%
 - I assume 90%-100% participation given the penal nature of the SLO
- Given the absence of market-clearing terms and where the Government has assumed the role of price-maker, I assume that Subordinated Debt bondholders do not participate in any additional equity raising
- **Potential cost to Government: c.€2,706mm-€2,855mm**

Source MS' EU Distressed Credit Trading Desk calculations

- AIB is NOT one-size-fits-all template for Irish bank recapitalization

Legal Considerations

Why, In My View, AIB Cannot Be a Template For BKIR's Recapitalization

Credit Institutions (Stabilization) Act 2010

- In paragraphs 132-156 of Ann Nolan's Affidavit to the High Court that accompanied the SLO application, she articulates why the SLO request comports with the detailed criteria laid out in Section 28(2),(a)-(h) of the Act
 - Section 28(2),(a)-(h) provides the Minister with a checklist of matters to which he “**shall have regard.....as he considers appropriate**” in making a SLO including, amongst other matters, quantum of assistance relative to balance sheet size, institutional viability, ability to raise equity capital from market sources and recoveries in a winding up
- In respect of an SLO for BKIR, I do not believe that Ms Nolan would be able to respond to these matters as she did for AIB. I do not believe that she would be able to justify such a measure in light of the potential external market support for a debt-for-equity transaction – of which **both the Govt and BKIR are fully aware**
- I believe it would be challenging for the Govt to seek a SLO (with a much less supportive fact base) while there is unresolved litigation on the validity of the legislation. It could hinder timing, create an obstacle to a workable market-based capital-raising and would potentially be damaging for the Govt's credibility

Source: http://ec.europa.eu/internal_market/consultations/docs/2011/crisis_management/consultation_paper_en.pdf.

The information contained herein is not intended to be, and does not constitute, advice from Morgan Stanley. Morgan Stanley is not your advisor (municipal, financial or any other kind of advisor) and is not acting in a fiduciary capacity.

This information was prepared by Morgan Stanley sales, trading, banking or other non-research personnel. This is not a research report and the views or information contained herein should not be viewed as independent of the interests of Morgan Stanley trading desks.

To the extent any prices or price levels are noted, they are for informational purposes only and are not intended for use by third parties, and are indicative as of the date shown and are not a commitment by Morgan Stanley to trade at any price. Please see additional important information and qualifications at the end of this material.

- AIB is NOT one-size-fits-all template for Irish bank recapitalization

Legal Considerations continued

Why, In My View, AIB Cannot Be a Template For BKIR's Recapitalization

Opinion of the European Central Bank on Emergency Stabilization of Credit Institutions, 17th Dec 2010

- In my view, the ECB's review of the Irish Legislation suggests that there may be a number of deficiencies and clearly notes that there was insufficient time allocated for review. It also notes that it expects that the "*consulting authority will take any additional measures to reflect the ECB's opinion to the extent appropriate*". I expect that we will see a challenge to this legislation as a late part of the creditors' motion to be heard on June 2nd 2011 in relation to the AIB SLO
 - "*The ECB has serious concerns that the draft law is insufficiently legally certain...*" Section 2.3

EU Consultative Document on the Future of Banking Policy, 6th January 2011

- In my view, this early, in-principle guidance from the EU and the clear distinctions between the quantum of Govt support, prevailing financial condition, complexion of investor-base and availability of external capital for BKIR versus AIB, compel the Govt to very seriously consider workable (as opposed to capricious), market-based capital-raising alternatives before it considers recourse to SLO legislation.
 - "*Reduce moral hazard by ensuring an appropriate allocation of losses to shareholders and creditors and protecting public funds. This implies, at a minimum, the costs of resolution should be **borne by the shareholders and, as far as possible, the creditors of the institution in question reflecting the normal order of ranking** and if necessary by the banking industry as a whole*"
 - "*Ensure legal certainty, appropriate safeguards for third parties and restrict any interference with property rights to what is necessary and justified in the public interest*"
- In my view, there is a significant risk that a non-market-based transaction will create economic value for the shareholders at the expense of a senior class of creditors
 - I think that the Government must tread carefully and not up-end, deliberately or otherwise, the priority doctrine that upholds creditors' rights and provides the basis for investing in Ireland, generally

Source: http://ec.europa.eu/internal_market/consultations/docs/2011/crisis_management/consultation_paper_en.pdf, ECB, European Central Bank

The information contained herein is not intended to be, and does not constitute, advice from Morgan Stanley. Morgan Stanley is not your advisor (municipal, financial or any other kind of advisor) and is not acting in a fiduciary capacity.

This information was prepared by Morgan Stanley sales, trading, banking or other non-research personnel. This is not a research report and the views or information contained herein should not be viewed as independent of the interests of Morgan Stanley trading desks.

To the extent any prices or price levels are noted, they are for informational purposes only and are not intended for use by third parties, and are indicative as of the date shown and are not a commitment by Morgan Stanley to trade at any price. Please see additional important information and qualifications at the end of this material.

- Dilution has been cited as an obstacle for a market-based recap of BKIR. I do not believe that will be the case
- Only a portion of the Govt's investment in BKIR is subject to dilution, the vast majority is not

The Issue of Diluting the Govt's Existing Stake

Overplayed, and Really, Not Such a Big Issue in My View.....

I believe that Govt's over-riding priority is to reduce the amount of capital that the taxpayer may have to contribute, as opposed to defending a small proportion of an existing investment against dilution

- I believe that it is a misconception that the Irish Govt has a €3.5bn equity investment in BKIR's common stock
- The Govt injected €3.5bn into BKIR through the NPRFC via €3.5bn (nominal value) of Preference Shares and warrants for 25% of the common stock. The warrants have been since repaid in cash. In 2010, the Govt converted €1.7bn Preference Shares for 33% of the common equity and also received another 3% in respect of Pref. dividends not paid in cash
- Today, on paper, that stake has a book value of some €2,984mm as follows:
 - €442mm market value for a 36% stake in BKIR. This is what would be subject to potential dilution
 - €1,837mm of 10.25% Preference Shares
 - €491mm cash repayment for the cancellation of warrants
 - €214mm cash dividends paid in February 2011 with respect to the Government Preference Shares
- I believe that since the Govt has stated that it wants to avoid a majority ownership stake in BKIR, it recognises that its equity stake will be diluted as it constitutes a lower burden on the Irish taxpayer than making further contributions from the Exchequer for a recapitalization
- The Irish Govt must, therefore, use all means to encourage the infusion of external capital, in the first instance from Subordinated Debt holders.
 - In effect, this means it has to create an attractive, standalone value proposition for Subordinated Debt holders and external investors

Source BKIR Financial Statements, Bloomberg, Central Bank of Ireland

The information contained herein is not intended to be, and does not constitute, advice from Morgan Stanley. Morgan Stanley is not your advisor (municipal, financial or any other kind of advisor) and is not acting in a fiduciary capacity.

This information was prepared by Morgan Stanley sales, trading, banking or other non-research personnel. This is not a research report and the views or information contained herein should not be viewed as independent of the interests of Morgan Stanley trading desks.

To the extent any prices or price levels are noted, they are for informational purposes only and are not intended for use by third parties, and are indicative as of the date shown and are not a commitment by Morgan Stanley to trade at any price. Please see additional important information and qualifications at the end of this material.

Why I Think That Bank of Ireland is Not Like AIB

Comparisons of the Two and Imputation of an SLO Process Misses the Point....

- The Irish Govt has an original investment in AIB of €7,200mm, representing 5% of FYE2010 assets which is now worth c.€5,790mm (Preferred Shares of €3,500mm+ Equity Value of €2,290mm)
 - The Irish Govt owns c.93.5% of AIB's common equity; it has been “**effectively**” nationalized
- The Irish Govt has an original investment in BKIR of €3,500mm, representing 2% of FYE2010 assets which is now worth c.€2,984mm
 - The Irish Govt owns c.36% of BKIR's common equity; it has a minority stake
- The Central Bank of Ireland's (“CBI”) Prudential Capital Assessment Review (“PCAR”) requires AIB to raise €13.3bn of new capital, and BKIR to raise €5.2bn of new capital which would give rise to pro-forma Core T1 ratios of 21.9% and 16.1%, respectively
 - I view AIB as significantly weaker than BKIR, and in reality, I don't believe that it has access to new, external capital
- In the circumstances, in my view, **the Govt had no choice** but to resort to a SLO to defray part of AIB's recapitalization cost and spare the taxpayer further burden
 - I see BKIR as different and could potentially raise external capital. It has an equity base that is still majority-held by private investors and it has a Subordinated Debt investor-base, which in my view, would be a willing, voluntary provider of equity capital

Source AIB Financial Statements, BKIR Financial Statements, Financial Measures Programme 31 March 2011

The information contained herein is not intended to be, and does not constitute, advice from Morgan Stanley. Morgan Stanley is not your advisor (municipal, financial or any other kind of advisor) and is not acting in a fiduciary capacity.

This information was prepared by Morgan Stanley sales, trading, banking or other non-research personnel. This is not a research report and the views or information contained herein should not be viewed as independent of the interests of Morgan Stanley trading desks.

To the extent any prices or price levels are noted, they are for informational purposes only and are not intended for use by third parties, and are indicative as of the date shown and are not a commitment by Morgan Stanley to trade at any price. Please see additional important information and qualifications at the end of this material.

My Views on Potential Valuation

Post Recapitalization Equity Value

Post-Recapitalization, Post-Loss TBVE 2011

	PCAR Cases			
	BRS Adverse	BKIR Adverse	BRS Base	BKIR Base
Tangible BV of Equity (ex Preferreds) FYE 2010	4,976.0	4,976.0	4,976.0	4,976.0
Loan Loss Estimates (2011-2013)	(10,100.0)	(7,900.0)	(7,400.0)	(6,000.0)
Provisions (2011-2013)	3,500.0	3,500.0	3,500.0	3,500.0
PCAR-Derived Deleveraging Loss Estimates (2011-2013)	(3,000.0)	(3,000.0)	(1,732.0)	(1,732.0)
Recapitalization (2011)	4,200.0	4,200.0	4,200.0	4,200.0
Pre-Impairment Profit (2011-2013)	2,104.0	2,104.0	2,104.0	2,104.0
Tangible BV of Equity (ex Preferreds) FYE 2013	1,680.0	3,880.0	5,648.0	7,048.0

MV-Implied Post-Recapitalization Equity Value

	Price	TSO/BV	Market Value
Market Value of Common Equity (€mm)	€ 0.237	5,298.9	1,255.8
MV T1 Securities	28.0%	718.9	201.3
MV LT2 Securities	55.0%	1,887.9	1,038.3
Post-Equitization Market Value			2,495.4
Additional Recapitalization (€4.2bn - €2.6bn)			1,600.0
Implied Market Capitalization (€mm)			4,095.4

LT2 Ownership Stake in Post-Recapitalization Common Equity

At Current Market Value	25.4%
At Book Value	46.1%
At Current Market Value + €1,600mm Recap Contribution	64.4%
At Book Value + €1,600mm Recap Contribution	85.2%

Source BKIR Financial Statements FYE201, BKIR Statement on PCAR dated 1st April 2011, CBI Financial Measures Programme dated 31st March 2011, MS' EU Distressed Credit Trading Desk calculations and market prices as at 16th May 2011

The information contained herein is not intended to be, and does not constitute, advice from Morgan Stanley. Morgan Stanley is not your advisor (municipal, financial or any other kind of advisor) and is not acting in a fiduciary capacity.

This information was prepared by Morgan Stanley sales, trading, banking or other non-research personnel. This is not a research report and the views or information contained herein should not be viewed as independent of the interests of Morgan Stanley trading desks.

To the extent any prices or price levels are noted, they are for informational purposes only and are not intended for use by third parties, and are indicative as of the date shown and are not a commitment by Morgan Stanley to trade at any price. Please see additional important information and qualifications at the end of this material.

My Views on Potential Valuation

Equity Returns to LT2 Investors

Implied Returns to LT2 Holders

		TBVE (€mm) in 2013										
		2,000	2,500	3,000	3,500	4,000	4,500	5,000	5,500	6,000	6,500	7,000
LT2 Equity Ownership	20%	-71%	-64%	-57%	-49%	-42%	-35%	-28%	-21%	-13%	-6%	1%
	25%	-64%	-55%	-46%	-37%	-28%	-19%	-10%	-1%	8%	17%	26%
	30%	-57%	-46%	-35%	-24%	-13%	-2%	8%	19%	30%	41%	52%
	35%	-49%	-37%	-24%	-12%	1%	14%	26%	39%	52%	64%	77%
	40%	-42%	-28%	-13%	1%	16%	30%	44%	59%	73%	88%	102%
	45%	-35%	-19%	-2%	14%	30%	46%	63%	79%	95%	111%	128%
	50%	-28%	-10%	8%	26%	44%	63%	81%	99%	117%	135%	153%

Summary

- I believe that the appropriate valuation metric is to look at equity values as a multiple of Tangible Book Value of Equity
- For the sensitivity table above, I have assumed that equity value is equivalent to 0.75x 2013 TBVE
- In my view, returns are driven by the assessment of the percentage of the recapitalized equity that LT2 investors would own in BKIR
- From my calculations overleaf:
 - LT2 ownership based on LT2 market value as a percentage of potential market capitalization is 25%
 - LT2 ownership based on LT2 book value as a percentage of potential market capitalization is 46%

Source MS' EU Distressed Credit Trading Desk calculations

- Take care not to ignore the doubling-dipping....

My Math of the Burden-Sharing to Date

In My View, Subordinated Debt Has Already Made a Significant Contribution

BKIR LT2 Exchanges

ISIN	Current Coupon	Maturity	Exchange Price	Ccy	Ccy '000 Outstanding Before Exchange	Ccy '000 Amount Exchanged	Ccy '000 Equity Raised	€'000 Equity Raised
2nd Feb 2010								
XS0186652557	4.625	27 Feb 2019	78.00	EUR	650,000	230,043	50,609	50,609
XS0223310862	€+30bps	03 Jul 2017	72.25	EUR	600,000	442,150	122,697	122,697
XS0283474483	E+20bps	24 Jan 2017	73.00	EUR	750,000	501,850	135,500	135,500
XS0309177318	\$+22bps	05 Jul 2018	70.25	USD	600,000	227,197	67,591	47,888
XS0238792393	4.875	22 Jan 2018	79.50	GBP	400,000	244,535	50,130	57,469
7th Sept 2010								
CA062786AA67	CDOR+79bps	22 Sep 2015	81.25	CAD	400,000	178,680	33,503	24,634
8th Dec 2010								
XS0283474483	E+20bps	24 Jan 2017	48.00	EUR	248,150	155,050	80,626	80,626
XS0223310862	€+30bps	03 Jul 2017	48.00	EUR	157,850	109,750	57,070	57,070
XS0238792393	4.875	22 Jan 2018	52.00	GBP	155,465	97,729	46,910	53,778
XS0186652557	4.625	27 Feb 2019	51.00	EUR	419,957	218,470	107,050	107,050
XS0381705549	9.250	07 Sep 2020	53.00	GBP	450,000	177,872	83,600	95,839
XS0044196425	10.750	22 Jun 2018	57.50	GBP	75,000	47,883	20,350	23,330
XS0487711573	10.000	12 Feb 2020	56.50	EUR	1,002,157	255,101	110,969	110,969
XS0487711656	10.000	12 Feb 2020	56.50	GBP	197,383	110,236	47,953	54,973
XS0309177318	\$+22bps	05 Jul 2018	46.00	USD	327,671	143,430	77,452	54,875
2nd Feb 2011								
CA062786AA67	CDOR+79bps	22 Sep 2015	52.00	CAD	221,320	82559	39,628	29,139
CA062786AD07	8.500	22 Sep 2018	59.00	CAD	145,720	55439	22,730	16,713
Total Equity Created from BKIR LT2 Instruments								1,123,158

- The EUR 10% '20, GBP 10% '20 & CAD 8.5% '18 are bonds that were previously exchanged with holders who accepted haircuts in previous liability management exercises

Source BKIR Exchange Offer Memoranda dated 2nd Feb 2010, 7th Sept 2010, 8th Dec 2010, 2nd Feb 2011. MS'EU Distressed Credit Trading Desk calculations

Disclaimer

This material was prepared by sales, trading, banking or other non-research personnel of one of the following: Morgan Stanley & Co. Incorporated, Morgan Stanley & Co. International plc, Morgan Stanley MUFG Securities Co., Ltd., Morgan Stanley Capital Group Inc. and/or Morgan Stanley Asia Limited (together with their affiliates, hereinafter “Morgan Stanley”). Unless otherwise indicated, the views herein (if any) are the author’s and may differ from those of the Morgan Stanley Research Department or others in the Firm. This information should be treated as confidential and is being delivered to sophisticated prospective investors in order to assist them in determining whether they have an interest in the type of instruments described herein and is solely for internal use.

This material does not provide investment advice or offer tax, regulatory, accounting or legal advice. By submitting this document to you, Morgan Stanley is not advising you to take any particular action based on the information, opinions or views contained in this document, and acceptance of such document will be deemed by you acceptance of these conclusions. You should consult with your own municipal, financial, accounting and legal advisors regarding the information, opinions or views contained in this document. Unless stated otherwise, the material contained herein has not been based on a consideration of any individual client circumstances and as such should not be considered to be a personal recommendation. This material was not intended or written to be used, and it cannot be used by any taxpayer, for the purpose of avoiding penalties that may be imposed on the taxpayer under U.S. federal tax laws. Each taxpayer should seek advice based on the taxpayer’s particular circumstances from an independent tax advisor.

This material has been prepared for information purposes only and is not a solicitation of any offer to buy or sell any security, commodity, futures contract or instrument or related derivative (hereinafter “instrument”) or to participate in any trading strategy. Any such offer would be made only after a prospective participant had completed its own independent investigation of the instrument or trading strategy and received all information it required to make its own investment decision, including, where applicable, a review of any prospectus, prospectus supplement, offering circular or memorandum describing such instrument or trading strategy. That information would supersede this material and contain information not contained herein and to which prospective participants are referred. If this material is being distributed in connection with or in advance of the issuance of asset backed securities, information herein regarding any assets backing any such securities supersedes all prior information regarding such assets. Unless otherwise specifically indicated, all information in these materials with respect to any third party entity not affiliated with Morgan Stanley has been provided by, and is the sole responsibility of, such third party and has not been independently verified by Morgan Stanley or its affiliates or any other independent third party. We have no obligation to tell you when information herein is stale or may change. We make no express or implied representation or warranty with respect to the accuracy or completeness of this material, nor are we obligated to provide updated information on the instruments mentioned herein. Further, we disclaim any and all liability relating to this material.

To the extent any prices or price levels are noted, they are for informational purposes only and are not intended for use by third parties, and are indicative as of the date shown and are not a commitment by Morgan Stanley to trade at any price.

Disclaimer

This material may have been prepared by or in conjunction with Morgan Stanley trading desks that may deal as principal in or own or act as market maker or liquidity provider for the instruments or issuers mentioned herein and may also seek to advise issuers of such instruments. Where you provide us with information relating to your order or proposed transaction ("Information"), we may use that Information to facilitate the execution of your orders or transactions, in managing our market making, other counterparty facilitation activities or otherwise in carrying out our legitimate business (which may include, but is not limited to, hedging a risk or otherwise limiting the risks to which we are exposed). Counterparty facilitation activities may include, without limitation, us taking a principal position in relation to providing counterparties with quotes or as part of the ongoing management of inventories used to facilitate counterparties. Where we commit our capital in relation to either ongoing management of inventories used to facilitate clients, or in relation to providing you with quotes we may make use of that information to enter into transactions that subsequently enable us to facilitate clients on terms that are competitive in the prevailing market conditions. Trading desk materials are not independent of the proprietary interests of Morgan Stanley, which may conflict with your interests. Morgan Stanley may also perform or seek to perform investment banking services for the issuers of instruments mentioned herein.

Any securities referred to in this material may not have been registered under the U.S. Securities Act of 1933, as amended, and, if not, may not be offered or sold absent an exemption therefrom. In relation to any member state of the European Economic Area, a prospectus may not have been published pursuant to measures implementing the Prospectus Directive (2003/71/EC) and any securities referred to herein may not be offered in circumstances that would require such publication. Recipients are required to comply with any legal or contractual restrictions on their purchase, holding, sale, exercise of rights or performance of obligations under any instrument or otherwise applicable to any transaction. In addition, a secondary market may not exist for certain of the instruments referenced herein.

The securities, commodities, futures or other instruments (or related derivatives) discussed in this material may not be suitable or appropriate for all investors. This material has been prepared and issued by Morgan Stanley for distribution to market professionals and institutional investor clients only. This material does not provide individually tailored investment advice or offer tax, regulatory, accounting or legal advice. Prior to entering into any proposed transaction, recipients should determine, in consultation with their own investment, legal, tax, regulatory and accounting advisors, the economic risks and merits, as well as the legal, tax, regulatory and accounting characteristics and consequences, of the transaction. You should consider this material among other factors in making an investment decision.

Options and futures are not for everyone. Before purchasing or writing options, investors should understand the nature and extent of their rights and obligations and be aware of the risks involved, including the risks pertaining to the business and financial condition of the issuer and the underlying instrument. For Morgan Stanley customers who are purchasing or writing exchange-traded options, please review the publication 'Characteristics and Risks of Standardized Options,' which is available from your account representative.

Disclaimer

The value of and income from investments may vary because of changes in interest rates, foreign exchange rates, default rates, prepayment rates, securities, prices of instruments or securities, market indexes, operational or financial conditions of companies or other factors. There may be time limitations on the exercise of options or other rights in instruments (or related derivatives) transactions. Past performance is not necessarily a guide to future performance. Estimates of future performance are based on assumptions that may not be realized. Actual events may differ from those assumed and changes to any assumptions may have a material impact on any projections or estimates. Other events not taken into account may occur and may significantly affect the projections or estimates. Certain assumptions may have been made for modeling purposes only to simplify the presentation and/or calculation of any projections or estimates, and Morgan Stanley does not represent that any such assumptions will reflect actual future events or that all assumptions have been considered or stated. Accordingly, there can be no assurance that estimated returns or projections will be realized or that actual returns or performance results will not materially differ from those estimated herein. Some of the information contained in this document may be aggregated data of transactions executed by Morgan Stanley that has been compiled so as not to identify the underlying transactions of any particular customer.

Notwithstanding anything herein to the contrary, Morgan Stanley and each recipient hereof agree that they (and their employees, representatives, and other agents) may disclose to any and all persons, without limitation of any kind from the commencement of discussions, the U.S. federal and state income tax treatment and tax structure of the transaction and all materials of any kind (including opinions or other tax analyses) that are provided to it relating to the tax treatment and tax structure. For this purpose, "tax structure" is limited to facts relevant to the U.S. federal and state income tax treatment of the transaction and does not include information relating to the identity of the parties, their affiliates, agents or advisors.

This information is not intended to be provided to and may not be used by any person or entity in any jurisdiction where the provision or use thereof would be contrary to applicable laws, rules or regulations.

This communication is directed in the UK to those persons who are eligible counterparties or professional clients and must not be acted on or relied upon by retail clients (each as defined in the UK Financial Services Authority's rules).

This information is being disseminated in Hong Kong by Morgan Stanley Asia Limited and is intended for professional investors (as defined in the Securities and Futures Ordinance) and is not directed at the public of Hong Kong.

This information is being disseminated in Singapore by Morgan Stanley Asia (Singapore) Pte. This information has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this information and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of this security may not be circulated or distributed, nor may this security be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA"), (ii) to a relevant person pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions, specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. Any offering of this security in Singapore would be through Morgan Stanley Asia (Singapore) Pte, an entity regulated by the Monetary Authority of Singapore.

Disclaimer

This information is being disseminated in Japan by Morgan Stanley MUFG Securities Co., Ltd., Any securities referred to herein may not have been and/or will not be registered under the Financial Instruments Exchange Law of Japan (Law No. 25 of 1948, as amended, hereinafter referred to as the "Financial Instruments Exchange Law of Japan"). Such securities may not be offered, sold or transferred, directly or indirectly, to or for the benefit of any resident of Japan unless pursuant to an exemption from the registration requirements of, and otherwise in compliance with the Financial Instruments Exchange Law and other relevant laws and regulations of Japan. As used in this paragraph, "resident of Japan" means any person resident in Japan, including any corporation or other entity organized or engaged in business under the laws of Japan. If you reside in Japan, please contact Morgan Stanley MUFG Securities for further details at +613-5424-5000.

This information is distributed in Australia by Morgan Stanley Australia Limited A.B.N. 67 003 734 576, holder of Australian financial services license No. 233742, which accepts responsibility for its contents, and arranges for it to be provided to potential clients. In Australia, this report, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act.

For additional information, research reports and important disclosures see <https://secure.ms.com/servlet/cls>. The trademarks and service marks contained herein are the property of their respective owners. Third-party data providers make no warranties or representations of any kind relating to the accuracy, completeness, or timeliness of the data they provide and shall not have liability for any damages of any kind relating to such data. This material may not be redistributed without the prior written consent of Morgan Stanley.