

Government Bonds

A Research Publication by DZ BANK AG

Methodology EMU Government Bonds Research

BONDS

Completed
13 Feb 2020 08:09

www.research.dzbank.de
Bloomberg DZBR <GO>

Author:
Christoph Kutt, CIIA, ANALYST
+49 - (0)69 - 74 47 - 36 52
christoph.kutt@dzbank.de

The research carried out by DZ BANK's Rates Markets Research for EMU Government Bonds is aimed at the cooperative banking sector, institutional clients at home and abroad and at central banks. This research may not be distributed or reproduced in any way whatsoever to any natural persons or legal persons or other institutions with their place of business or head office in the United States of America (USA). It is strictly not suitable for retail customers.

The bonds of 11 issuers are covered as part of the analysis work of DZ BANK's Rates Markets Research for EMU Government Bonds. These issuers are **Belgium, Germany, Finland, France, Greece, Ireland, Italy, the Netherlands, Austria, Portugal and Spain**.

We issue one recommendation for the senior unsecured bonds of each of the issuers mentioned above (referred to in the following as "**bonds**" or "**EMU sovereign bonds**").

The analysis of these bonds from EMU states consists firstly of quantitative factors (total-return expectations, risk premium, fundamental and macroeconomic data) and secondly, of qualitative factors (specific features of a country, social developments, general policies, especially economic policies and credit trend). Both factors are brought together using the analysts' expert knowledge. This knowledge is based on the analysts' experience of handling quantitative and qualitative factors, of relevant markets, of the peer group and individual issuers covered by DZ BANK's EMU Government Bonds Research. The recommendation is the result of the combination of these two factors.

The remaining euro states, **Slovakia, Slovenia, Estonia, Malta, Cyprus, Latvia and Lithuania** are only analysed in the context of their impact on the 11 issuers we do cover. We do **not** issue an **investment recommendation** for these states.

Our analyses do not include a credit rating as defined in Regulation (EC) 1060/2009 of 16 September 2009 on the rating agencies.

THEORETICAL BASIS

Our investment recommendations for EMU government bonds are based on our assessment of the future development of the total return on the entirety of the bonds of the respective issuer in relation to the market. Another specific element in the analysis is the risk premium or credit spread. Furthermore, we determine a credit trend as an outlook for the development of the agency ratings of an issuer.

Total return

The total return of an EMU government bond consists of the change in the market price of the bonds and the interest earned (accrued interest). The change in the market price is determined by the change in the yield and risk premium (credit spread) and the roll-down effect.

Risk premium or credit spread

For the purpose of a relative comparison of the issuers from the point of view of risks, we look at their spread in relation to the yield of less risky Bunds. Since Bunds currently have an AAA rating, they are regarded as largely risk-free by the capital market. The spread therefore expresses a risk premium in relation to a risk-free investment. In a wider sense, the risks premiums can be compared in terms of concept with the credit spreads in DZ BANK's credit research; the difference in this instance is that it is the Bund yields which are the risk-free value and not the swap rates. Essentially, however, the risk premiums in the case of EMU sovereign bonds also reflect a different default risk in relation to an issuer without default risk and they can therefore be described virtually as credit spreads. These credit spreads change over time on the back of market-led changes in the evaluation of the issuers. In the total-return analysis, the risk premium is reflected in the spread effect, but also in the roll-down.

Credit trend

The credit trend is the analyst's visualized forecast for the development of an issuer's agency rating (projected change in direction of the simple average of the ratings of Moody's, Fitch and S&P for the following 12 months): "positive" and/or (▲) is assigned for projected upgrades, "negative" and/or (▼) is assigned for projected downgrades, "stable" and/or (→) is assigned if ratings are expected to remain unchanged. If none of the three above mentioned agencies has assigned a rating, no credit trend projection will be made for the relevant issuer.

SUPERORDINATE FACTORS

In any analysis of individual bonds in EMU sovereign bond research, analysts have to factor in not only the issuer-specific aspects which we describe later on, but also wider aspects. These are factors of a general nature which can have an influence on an issuer's standing as a debtor and the investment recommendation to be derived. The analyst in charge of a specific issuer has to take these factors into consideration in the analysis of the respective issuer in order for DZ BANK Research's assessments and recommendations to be based on identical criteria and be consistent per se.

DZ BANK Research's economic forecasts are key parameters. Growth rates for GDP and its components, inflation rates, data on the global economy and similar figures can be important in assessing the issuer in question. DZ BANK Research's interest

^{1) – 12)} Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

rate forecast is another superordinate reference point for the analysis of individual securities and the recommendations derived from it. Political aspects of a global nature are a further aspect. Global political uncertainties, wars and conflicts can even have an influence on the assessment of third-party issuers which are not directly involved or on the recommendation derived from it.

In addition, new, wider regulatory requirements, monetary policy and sundry factors can also be relevant for the investment recommendation.

Likewise, it is important to bear in mind the market's general risk assessment. In the event of a general rise in risk-taking in the market, the credit spreads of bonds of all issuers tend to fall, and consequently, in such conditions the bonds of issuers with a poorer rating whose credit spreads are trading at a relatively higher level tend to offer the biggest gain from carry and any spread tightening. Conversely, a deterioration in general sentiment in the market and a rise in risk aversion tend to lead to a widening in the credit spreads of all bond issuers and, in such conditions, the bonds of better rated issuers, whose credit spreads are trading at relatively tight levels, offer the biggest carry gain and gain from a widening of credit spreads.

DZ BANK Research's fundamental and interest rate forecasts have to be taken into account by analysts in their analysis of the bonds of individual issuers. As part of this process, it is the responsibility of the respective analysts to assess the potential impact of central requirements on the object of their analysis.

RELEVANT FACTORS IN THE ANALYSIS OF EMU STATES

The bonds of 11 issuers are covered as part of the analysis work of DZ BANK's Rates Markets Research for EMU Government bonds. These issuers are Belgium, Germany, France, Greece, Ireland, Italy, the Netherlands, Austria, Portugal and Spain ("EMU states"). We issue a recommendation for the entirety of the bonds of each respective issuer. We only look at the remaining euro states, namely Slovakia, Slovenia, Estonia, Malta, Cyprus, Latvia and Lithuania, but only in so far as they have any impact on the 11 issuers covered. We do not issue a recommendation for the bonds of these other EMU states.

Our analysis of the bonds of EMU states consists firstly of quantitative factors and secondly of qualitative factors. Both are combined through the expert knowledge of the respective analysts. This knowledge is based on the analysts' experience of the relevant markets, of the peer group covered by BANK EMU Government Bonds Research and of individual issuers. The result of this combination forms the investment recommendation. The respective depth of analysis depends to a large extent on what information the respective countries provide via corresponding authorities or what information can be obtained from third-party sources such as institutions or organisations.

» Quantitative factors

DZ BANK's EMU Sovereign Credit Research initially forms a quantitative starting point for estimating an issuer's expected total return in the next six months. In addition, current market yield levels are combined with DZ BANK's interest rate forecast and enhanced with a spread component. This spread component is based on the regression of Bund yields and the relevant spreads of an EMU state.

^{1) - 12)} Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

Other quantitative factors are data of the kind which describes the credit-risk profile of an EMU state and the fundamental economic situation. Especially relevant in this instance are various debt ratios, together with a country's political plans and macroeconomic figures such as growth expectations.

» Qualitative factors

Each EMU state is subject to specific factors arising from social developments, general policies and especially economic policies, and which are perceived in a variety of ways by the market as regards the way in which they treat this information. This information which is in the public domain, comments and news are not quantifiable, but must nevertheless be reflected in the analysis based on the professional and methodical experience of the respective analyst (expert knowledge) for a full overall picture.

The analysts form their opinion of the future performance of the EMU state in question based on their own expertise in methodology and modelling of financial and economic theory, and above all on their experience of the way in which facts, information, rumours and expectations (their own, those of the consensus) impact in specific market conditions.

The analyst compares his opinion with the assessments of the established rating agencies Moody's, S&P and Fitch. The analyst derives the credit trend from a comparison between his own opinion and the agencies' assessments.

At the same time, the result of the analysis of the quantitative factors can be outweighed by qualitative factors as the primary starting point in view of the current market situation/state of the market, e.g. if uncertainty about a major political event is so great that fundamental data based on figures is ignored. Conversely, analysts can prefer quantitative factors if they arrive at this conclusion based on an assessment founded on their experience. Accordingly, how the analysts proceed will vary on a case-by-case basis and cannot be applied universally to each market situation. The analysts' professional experience and methodological knowledge about the workings of quantitative and qualitative information/factors in EMU states in various market situations are a crucial factor in the process of forming an opinion.

During the opinion-forming process of the analysis of EMU sovereign bonds, the analysts' individual opinion is compared with DZ BANK Research's current overall assessment and adjusted if necessary in an overall context. At the end, there should be a plausible forecast picture which fits in with the overall DZ BANK Research assessment and is generated using the entire wealth of experience of those involved in the process.

RELEVANT FACTORS IN ASSIGNING INVESTMENT RECOMMENDATIONS

In Fixed Income Research, recommendations on individual issuers are split between "**outperformer**", "**underperformer**" and "**market performer**". A key factor for the investment recommendation on a particular issuer is whether, in the opinion of the

^{1) – 12)} Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

analyst, its bonds are likely to perform better than, worse than or in line with the bonds of similar issuers in the next six months. "Outperformer" means that the issuer's bonds are expected to do better than those of the peer group. "Underperformer" means that the bonds of an issuer are expected to perform worse than those of the peer group. "Market performer" means that the issuer's bonds should not differ significantly from the performance of bonds of the peer group according to the assessment of analysts.

The recommendation categories "outperformer", "underperformer" and "market performer" are based on the analysts' assessment of how the bonds of the issuer in question will perform in relation to those of the peer group. The peer group does not have to be defined exactly in this respect; it generally includes the issuers in the relevant market segment covered by DZ BANK Research.

Various total-return components are the yardstick used by analysts to judge to expected performance of bonds. The focus in this respect is on the performance of the credit spreads of the entirety of the bonds of the respective issuer. This credit spread can prove to be constant during the period under consideration; it can also rise or fall. Falling spreads would be positive for investors. If the premium charged for incurring the credit risk falls, then, all else being equal, the bonds of the issuer perform better than Bunds. Taking into account the performance of the entire peer-group investment universe, the analysts must then decide whether based on their assessment, the bonds of the issuer in question will perform better, the same or worse.

The decision in this respect is based on the analysts' assessment of the credit worthiness of the issuer in question, assuming it is relevant in the respective market phase. In general, whether an improvement or deterioration in the credit quality is forecast depends on whether the capital markets also expect it, or whether the realisation of their expectations would be a surprise for the majority of market participants. Further factors have an impact. It is important to bear in mind how the general economic trend, central bank policy, geopolitical risks and the behaviour of the capital markets will have an effect on the spreads of the issuer under consideration in the forthcoming months (see above).

The investment recommendation is therefore assigned on the basis of a combination of **fundamental analysis** and **relative-value analysis**. Investment recommendations are based not only on a total-return analysis but also on the credit-worthiness/fundamental analysis described above, which allows an approximate assessment of an issuer's default risk. However, DZ BANK Research does not work out a "fair" absolute credit spread level derived from fundamental data which is then used to issue a recommendation. Instead, the evaluation is done through a comparison of the risks identified by DZ BANK for the entirety of the bonds of the respective issuer with the risks of comparable bonds issued by other issuers, taking into account the respective credit spreads. **The recommendation is therefore a relative assessment**, in other words, the analysts must not only focus on the specific issuers they are concerned with, but also on the peer group.

SOURCES: DATA, STUDIES, INFORMATION

As regards the sources of information which DZ BANK Research uses to form an opinion, a distinction is made between concrete and non-concrete origin. Information is taken from our technical sources.

^{1) – 12)} Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

» Concrete sources of information

As part of the ongoing analysis of all relevant issuers and instruments, there may be crucial changes in the relevant environment which can lead to an adjustment (which must comply with technical and methodological requirements) of expectations regarding the evolution of issuer profiles or of the market performance of relevant financial instruments in the coverage. In such an eventuality, there will be concrete information in the form of information available in the public domain from the media, freely accessible academic analyses, publicly known/discussed legislation plans, state budget plans, regulation measures, public communication from central banks or a rating agency and/or concrete calculations carried out by the analyst which has led to a crucial change in the expectation. This is also true of tactically/strategically-driven recommendations.

» Non-concrete sources of information

As part of the analysis coverage of EMU sovereign credits, analysts are constantly processing relevant information which determines the current direction of the market and factoring it into the way they form their opinion. As part of this process, the analysts have to take into account as yet unverified information just as much as the ongoing public discussion (political also) regarding the market trend and balance this with their own views of the market. In addition, they have to process the general information put forward by the media or statements from the political front and/or other bodies such as institutions or central banks or general, public reporting on geopolitics. In their permanent processing, analysts have to evaluate this information, discard it or take it on board in order to adjust their opinion or stick to it.

» Technical sources of information

From a technical point of view, the information systems from which our analysts draw their information are Bloomberg, Reuters, Datastream and other market information service providers, along with publicly accessible websites of country-specific offices, authorities, institutions and overarching organisations. In addition, various print media and TV reporting services are used.

I. IMPRINT

Published by:

DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main,
Platz der Republik, 60265 Frankfurt am Main

Telephone: + 49 69 7447 - 01

Telefax: + 49 69 7447 - 1685

Homepage: www.dzbank.de

E-mail: mail@dzbank.de

Represented by the Board of Managing Directors:

Uwe Fröhlich (Co-Chief Executive Officer),

Dr. Cornelius Riese (Co-Chief Executive Officer), Uwe Berghaus,

Dr. Christian Brauckmann, Ulrike Brouzi, Wolfgang Köhler,

Michael Speth, Thomas Ullrich

Chairman of the Supervisory Board: Henning Deneke-Jöhrens

Head office of the company: Registered as public limited company in Frankfurt am Main, Local Court (Amtsgericht) Frankfurt am Main, Commercial Register HRB 45651

Competent supervisory authorities:

DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main is subject to the supervision of the Federal Financial Supervisory Authority (BaFin) and the European Central Bank (ECB).

VAT ident. no.: DE114103491

Protection schemes: DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main is a member of the officially recognised BVR Institutssicherung GmbH and the additional voluntary Sicherungseinrichtung des Bundesverband der Deutschen Volksbanken und Raiffeisenbanken e.V. (Protection Scheme of the National Association of German Cooperative Banks): www.bvr-institutssicherung.de
www.bvr.de/SE

Responsible for the contents: Stefan Bielmeier, Head of Research and Economics
© DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, 2020
This document may only be reprinted, copied or used in any other way with the prior consent of DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main

II. MANDATORY DISCLOSURES FOR FINANCIAL ANALYSES AND FURTHER REMARKS

1. Responsible Company

1.1 This **Financial Analysis** has been prepared by **DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main (DZ BANK)** as an investment firm.

Financial analyses are **independent client information** containing **generic investment recommendations** regarding **specific issuers** or **specific financial instruments**, but they do not make allowance for any individual investment criteria.

1.2 The **mandatory disclosures for Research Publications** (Financial Analyses and Other Research Information) as well as **further remarks, especially the Conflicts of Interest Policy of DZ BANK Research**, regarding **used methods, procedures, and statistics**, can be **read and downloaded free-of-charge** under www.dzbank.com/disclosures.

2. Competent Supervisory Authorities

DZ BANK is supervised as a credit institution and as an investment firm by:

– **European Central Bank** - www.ecb.europa.eu

Sonnemannstraße 20 in 60314 Frankfurt / Main and

– **Federal Financial Supervisory Authority (BaFin)** - www.bafin.de

Marie-Curie-Straße 24 - 28 in 60439 Frankfurt / Main

Regarding Research Publications (Financial Analyses and Other Research Information) the DZ BANK linked **local cooperative banks are supervised by:**

– **Federal Financial Supervisory Authority (BaFin)** - www.bafin.de

Marie-Curie-Straße 24 - 28 in 60439 Frankfurt / Main

3. Independent Analysts

3.1 The **Research Publications** (Financial Analyses and Other Research Information) of DZ BANK are independently prepared by its employed analysts or by competent analysts commissioned in a given case on the basis of the binding **Conflicts of Interest Policy**.

3.2 Each analyst involved in the preparation of the contents of this Research Publication confirms that

- this Research Publication represents his independent specialist evaluation of the analysed object in compliance with the Conflicts of Interest Policy of DZ BANK and
- his compensation depends neither in full nor in part, neither directly nor indirectly, on an opinion expressed in this Research Publication.

4. Definitions of the Categories for Investment Recommendations in Financial Analyses

The **categories for investment recommendations in Financial Analyses** of DZ BANK are defined as follows:

4.1 Shares:

- Fundamental Analysis:

"Buy" means that the absolute appreciation expected in the next twelve months is greater than 10%.

"Sell" means that the absolute depreciation expected in the next twelve months is greater than 10%.

"Hold" means that the absolute *price* volatility expected in the next twelve months lies between +10% and -10%.

4.2 Fixed Income Instruments:

The terms "outperformer", "market performer" and "underperformer" are used in the assessment of individual issuers. These are relative estimates, i.e. they are independent of their respective peer groups and therefore independent of any overriding allocation recommendations for market segments (cf. mandatory disclosures on other research information).

The basis for the assessment is the expectation of the credit return/total return of an issuer's bonds - defined differently depending on the segment - over the next six months (cf. DZ BANK method studies at www.dzbank.com/disclosures). As a rule, the analyst's main scenario is assumed. In cases where an issuer is exposed to high idiosyncratic risks, alternative spread scenarios are also taken into account when calculating the expected credit turn/total return. Since issuers have generally issued a large number of bonds, the expected credit return/total return cannot naturally be quantified.

The expected credit return/total return is compared with the expected credit return/total return of a relevant peer group, usually the respective coverage/peer group. If it is significantly higher than that of the peer group, the assessment is **"outperformer"**. Normally, a higher weighting in the portfolio than in the benchmark should be applied here.

If the credit return/total return is significantly lower than that of the peer group, the assessment is **"underperformer"**. Normally, a lower portfolio weighting should be applied here than in the benchmark.

If the expected credit return/total return essentially corresponds to that of the peer group or if the risk profile includes strong fluctuations in both directions so that no active positioning against the benchmark should be taken, the assessment is **"market performer"**.

1. Government bonds

The issuer-specific investment recommendation for government bonds of a country in the covered peer group is based on whether DZ BANK estimates that the performance resulting from the total return will be better, worse or similar to the peer group of the relevant segment in the following six months.

The basis for the assessment is the expectation of the total return of the issuer's bonds on the basis of national law in the coming six months (cf. DZ BANK method studies at www.dzbank.com/disclosures).

2. Financials (senior unsecured)

The issuer-specific investment recommendation for an issuer's euro-denominated unsecured senior bonds relative to its peer group (iBoxx Banks Senior Index) is based on whether DZ BANK estimates that the performance resulting from the credit return will be better, worse or similar to the peer group in the following six months.

The basis for the assessment is the expected credit return on the issuer's bonds over the next six months (see DZ BANK methodological studies at www.dzbank.com/disclosures).

3. Corporate Bonds (senior unsecured)

The issuer-specific investment recommendation for the euro-denominated unsecured senior bonds of an issuer relative to its peer group (sector/rating class) is based on whether DZ BANK estimates that the performance resulting from the credit return will be better, worse or similar to that of the peer group over the next six months.

¹⁾ – ¹²⁾ Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

The basis for the assessment is the expected credit return of the issuer's bonds over the next six months (see DZ BANK method studies at www.dzbank.com/disclosures).

4. Covered Bonds

The investment recommendation for a covered bond programme of an issuer is based on DZ BANK's assessment as to whether the covered bonds can move better, worse or in step with bonds of comparable covered bond programmes in the following six months. The recommendation categories relate to covered bonds ("collateralised bank bonds" or "covered bonds") denominated in euros and apply only to the publication date.

The basis for the assessment is the expectation of the credit return of the bonds from an issuer's covered bond programme over the next six months (validity of the recommendation: one trading day) (cf. DZ BANK Methodologies at www.dzbank.com/disclosures).

- 4.3 Categories for isolated statements without investment recommendation**
Statements on the **isolated evaluation of specific aspects that precede an investment recommendation** on a financial instrument and / or an issuer - **especially** according to the **sustainability criteria** defined by DZ BANK, its defined **value approach**, its defined **asset allocation** (DZ BANK Sample Portfolio), its defined sector strategy Euro-Stoxx (**DZ BANK Sector Favorites**), its defined valuation of payments to beneficiaries (**DZ BANK Dividend Aristocrats**), their **weighting recommendations for market segments** or otherwise defined groups of different issuers, i.e. their **weighting recommendations in the overall market strategy Fixed Income**, in the *sector strategy Corporates* and their **weighting recommendations for covered bond jurisdictions** - are **not investment categories** and therefore **do not contain any investment recommendations**. These isolated statements **alone are not sufficient** to form the basis of an investment decision. Reference is made to the explanation of the used relevant methods.

5. Scheduled Updates and Validity Periods of Investment Recommendations

- 5.1** The frequency of **updates of Financial Analyses** depends in particular on the underlying macroeconomic conditions, current developments on the relevant markets, the current development of the analyzed companies, measures undertaken by the issuers, the behavior of trading participants, the competent supervisory authorities and the competent central banks as well as a wide range of other parameters. The periods of time named below therefore merely provide a **non-binding indication** of when an updated investment recommendation may be expected.
- 5.2 No obligation exists to update an investment recommendation.** If an investment recommendation is updated, this update **replaces the previous investment recommendation with immediate effect**. If no update is made, investment recommendations **end / lapse on expiry** of the **validity periods** named below. These periods **begin** on the **day** and at the **time** the investment recommendation is **completed**.

- 5.3 The validity periods for investment recommendations (financial analyses)** are as follows:

Shares:

Fundamental analysis six months

Fixed income instruments:

Government bonds six months

Financials (senior unsecured) six months

Corporate Bonds (senior unsecured) six months

Covered Bonds one trading day

- 5.4 Evaluations of isolated aspects without investment recommendation** have the following validity periods:

Sustainability analyses: one month

Analyses according to the **value approach:** one month

Asset allocation analyses (**DZ BANK Sample Portfolio**): one month

Euro Stoxx sector strategy (**DZ BANK Sector Favorites**): one month

Dividends (**DZ BANK Dividend Aristocrats**): three months

Credit Trend Issuers twelve months

Share indices (fundamental): three months

Currency areas: six to twelve months

Weighting recommendations for market segments six months

Overall market strategy six months

Sector strategy Corporate Bonds six months

Strategy Covered Bonds: six months

Derivatives:

(Bund futures, Bobl futures, treasury futures, Buxl futures): one month

Commodities:

one month

- 5.5** In a given case, updates of analyses may also be **temporarily suspended without prior announcement** on account of compliance with supervisory regulations.
- 5.6** If **no updates are to be made in the future** because the analysis of an object is to be discontinued, notification of this shall be made in the final publication or, if no final publication is made, the close of the analysis shall be given in a separate note.
- 6. General Overview of Investment Recommendations on Financial Instruments and Issuers**
Each working day DZ BANK prepares a **general overview of all investment recommendations** on financial instruments and / or issuers disseminated in the **last twelve months**, containing all details specified by the supervisor. This list can be **read and downloaded free-of-charge** under www.dzbank.com/disclosures.
- 7. Avoiding and Managing Conflicts of Interest**
- 7.1** DZ BANK Research has a binding **Conflicts of Interest Policy** which ensures that the relevant conflicts of interest of DZ BANK, the DZ BANK Group, the analysts and employees of the Research and Economics Division and persons closely associated with them are avoided, or - if such interests are effectively unavoidable - are appropriately identified, managed, disclosed and monitored. Material aspects of this policy, which can be **read and downloaded free-of-charge** under www.dzbank.com/disclosures are summarized as follows.
- 7.2** DZ BANK organizes its Research and Economics Division as a confidentiality area and protects it against all other organizational units of DZ BANK and the DZ BANK Group by means of Chinese walls. The departments and teams of the Division that produce Financial Analyses are also protected by Chinese walls and by spatial separation, a closed doors and clean desk policy. Beyond the limits of these confidentiality areas, communication may only take place in both directions according to the need-to-know principle.
- 7.3** The Research and Economics Division does not disseminate Research Publications on issues of DZ BANK or on financial instruments issued by companies of the DZ BANK Group.
- 7.4** **In principle, employees of the Research and Economics Division and persons closely associated with them may not unrestrictedly invest in financial instruments covered by them in the form of Financial Analyses. For commodities and currencies, DZ BANK has also defined an upper limit based on the annual gross salary of each employee which, in the opinion of DZ BANK, also excludes the possibility of personal conflicts of interest among employees in the preparation of Other Research Information.**
- 7.5** Other theoretically feasible, information-based personal conflicts of interest among employees of the Research and Economics Division and persons closely associated with them are avoided in particular by the measures explained in **sub-paragraph 7.2** and the other measures described in the policy.
- 7.6** The remuneration of employees of the Research and Economics Division depends neither in whole nor in the variable part directly or materially on the earnings from investment banking, trade in financial instruments, other securities related services and / or trade in commodities, merchandise, currencies and / or on indices of DZ BANK or the companies of the DZ BANK Group.
- 7.7** DZ BANK and companies of the DZ BANK Group issue financial instruments for trading, hedging and other investment purposes which, as underlying instruments, may refer to financial instruments, commodities, merchandise, currencies, benchmarks, indices and / or other financial ratios also covered by DZ BANK Research. Respective conflicts of interest are primarily avoided in the Research and Economics Division by means of the aforementioned organizational measures.
- 7.8** **Investment recommendations for the same financial instrument / issuer that have deviated in the last 12 months are stated in the respective current Financial Analysis together with the relevant investment recommendation category and date.**
- 7.9** The **quarterly information** on the share of the investment categories stated in **sub-paragraph 4.1** and **4.2** for **shares** and **fixed income instruments** in the total number of investment recommendations of DZ BANK and the **information** on the share of these categories relating to the issuers to whom DZ BANK has rendered services in the **past twelve months** in accordance with Appendix I Sections A and B of Directive 2014/65/EU, can

¹⁾ - ¹²⁾ Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

be read and downloaded free-of-charge under www.dzbank.com/disclosures.

7.10 The following definitions explain the potential conflicts of interest (so-called 'keys') of DZ BANK and / or the companies of the DZ BANK Group that must be stated in accordance with supervisory regulations in respect of the issuers and / or financial instruments analyzed in a Financial Analysis:

- 1) DZ BANK owns a **net long position** exceeding 0,5% of the total issued share capital of the issuer, calculated according to Article 3 of Regulation (EU) No. 236/2012 and Chapter III and IV of Commission Delegated Regulation (EU) No. 918/2012.
- 2) DZ BANK owns a **net short position** exceeding 0,5% of the total issued share capital of the issuer, calculated according to Article 3 of Regulation (EU) No. 236/2012 and Chapter III and IV of Commission Delegated Regulation (EU) No. 918/2012
- 3) DZ BANK or any of its affiliates beneficially **owns 1 % or more** of any class of common equity securities of the issuer.
- 4) The issuer holds shares of DZ BANK exceeding 5 % of its total issued share capital.
- 5) DZ BANK, any of its affiliates or a natural or legal person involved in the preparation of the investment recommendation acting under contract, is a **market maker, designated sponsor** and / or **liquidity provider** in financial instruments of the issuer at the time of publication of this research report.
- 6) DZ BANK, any of its affiliates or a natural or legal person involved in the preparation of the investment recommendation acting under contract, has **managed or co-managed a private and / or publicly disclosed offering** of financial instruments of the issuer in the past 12 months.
- 7) The issuer is or has been a **client** to DZ BANK regarding **investment banking services** over the 12-month period preceding the date of publication of this research report.
- 8) DZ BANK or any of its affiliates received **compensation for investment banking services** from the issuer in the past 12 months.
- 9) DZ BANK or any of its affiliates expects to receive or intends to seek **compensation for investment banking services** from the issuer in the next 3 months.
- 10) The issuer is or has been a **client** to DZ BANK, to any of its affiliates or a natural or legal person involved in the production of the investment recommendation acting under contract regarding **securities-related services** as set out in Sections A and B of Annex I of Directive 2014/65/EU, which agreement has been in effect or has given rise to the obligation to pay or receive compensation during the 12-months period preceding the date of publication of this research report.
- 11) The issuer is or has been a **client** to DZ BANK regarding **non-securities services** over the 12-month period preceding the date of publication of this research report.
- 12) DZ BANK and / or any of its affiliates have been a party to an **agreement** with the issuer relating to the **preparation of investment recommendations** concerning financial Instruments issued by him.

8. Recipients and Use of Financial Analyses

8.1 Recipients

Financial Analyses of DZ BANK are directed at **eligible counterparties** as well as **professional clients**. They are therefore **not** suitable for dissemination to **retail clients** unless (i) a financial analysis has been **explicitly** labelled by DZ BANK as suitable also for retail clients or (ii) is disseminated by an investment firm properly authorized in the European Economic Area (EEA) or Switzerland to retail clients, who evidently have the necessary knowledge and sufficient experience in order to understand and evaluate the relevant risks of the relevant investment recommendations.

Financial Analyses are authorized by DZ BANK for dissemination to the aforementioned recipients in in **Member States of the European Economic Area and Switzerland** as well as in accordance with the **provisions set forth in sub-paragraphs 8.4 and 8.5** in the therein named additional country.

8.2 Main Sources of Information

For the preparation of its Research Publications, DZ BANK uses only information sources which it considers itself to be reliable. However, it is not feasible to make own checks of all the facts and other information taken from these sources in every case. If in a specific case, however, DZ BANK has

doubts over the reliability of a source or the correctness of facts and other information, it shall make specific reference to this in the Research Publication. The main sources of information for Research Publications are:

Information and data services (e.g. Refinitiv, Bloomberg, VWD, IHS Markit), licensed rating agencies (e.g. Standard & Poors, Moody's, Fitch, DBRS), specialist publications of the sectors, the business press, the competent supervisory authorities, information of the issuers (e.g. annual reports, securities prospectuses, ad-hoc disclosures, press and analyst conferences and other publications) as well as its own specialist, micro and macro-economic research, examinations and evaluations.

8.3 No securities prospectus | no individual investment recommendation
Under no circumstances can or should a Research Publication replace a securities prospectus and / or specialist investment advice necessary for a specific investment. For this reason a Research Publication cannot be used as sole basis for an investment decision.

8.4 International Restrictions of Use outside the EEA and Switzerland
This Financial Analysis may **only** be brought into the **Republic of Singapore** by the respective company set forth in **sub-paragraph 8.5** and be used in this country in accordance with the regulations applicable to them there.

Republic of Singapore

DZ BANK Singapore Branch is exempt from holding a financial advisor's license to act as a financial advisor in Singapore under section 23(1)(a) of the Financial Advisors Act (Cap.110) (FAA).

DZ BANK makes use of the exemption for 'Foreign Research Houses' under Regulation 32C (1) of the Financial Advisors Regulations (FAR) from licensing under section 23(1)(f) of the FAA in respect of the activity of advising others by issuing or promulgating research analyses or research reports, whether in electronic, print or other form, concerning any investment. Its Research Publications must exclusively be distributed by DZ BANK Singapore Branch. They are intended for general circulation, but **solely** to '**accredited investors**' and / or '**expert investors**'.

Dealing with '**accredited investors**' or '**expert investors**' DZ BANK is relying on the following exemptions to the Financial Advisors Act, Cap 110:

- (1) the exemption in Regulation 33 of the FAR, which exempts DZ BANK from complying with Section 25 of the FAA on disclosure of product information to clients,
- (2) the exemption set out in Regulation 34 of the FAR, which exempts DZ BANK from complying with Section 27 of the FAA on recommendations, and
- (3) the exemption set out in Regulation 35 of the FAR, which exempts DZ BANK from complying with Section 36 of the FAA on disclosure of certain interests in securities.

This Research Publication **does not take into account the specific investment objectives, financial situation or particular needs** of any particular recipient.

A financial advisor should be consulted if there are any questions regarding the contents of this Research Publication.

Any recipient should **seek investment advice** regarding the **suitability** of any product referred to in this Research Publication, taking into account his specific financial objectives, financial situation or particular needs, before making a commitment to purchase any such product.

8.5 Contact of DZ BANK outside the EEA and Switzerland

The contact is not obliged to update the Research Publication. Investors must inform themselves about the current development of business as well as of any changes affecting the issuers.

In the Republic of Singapore:

DZ BANK AG Singapore Branch, 50 Raffles Place #43-01, Singapore Land Tower, Singapore 048623

The DZ BANK AG Singapore Branch is a legally dependent branch of DZ BANK.

9. Summary of used Methods and Procedures

Detailed information on generally recognized as well as proprietary methods and procedures used by DZ BANK Research can be read and downloaded free-of-charge under www.dzbank.com/disclosures.

^{1) - 12)} Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

10. FIXED INCOME RESEARCH: RECOMMENDATION CHANGES WITHIN THE LAST 12 MONTHS

ABN AMRO Bank	18.09.2019	Underperformer	Goldman Sachs Group	25.06.2019	Marketperformer	Swedbank	02.12.2019	Underperformer
Achmea Bank	02.12.2019	Underperformer	Greece	29.08.2019	Outperformer	Swiss Re	13.11.2019	Underperformer
Adolf Würth GmbH & Co. KG	02.12.2019	Marketperformer	Greece	25.06.2019	Marketperformer	Telefónica	10.05.2019	Marketperformer
Aegon	07.10.2019	Marketperformer	GREENKE	03.09.2019	Marketperformer	Telefónica	27.02.2019	Outperformer
AIB Group	13.12.2019	Marketperformer	Hamburg Commercial Bank	02.12.2019	Outperformer	Telia Company	02.12.2019	Underperformer
AIB Group	18.09.2019	Underperformer	Hannover Rück	21.11.2019	Underperformer	Telstra Corp	15.01.2020	Marketperformer
AIB Group	11.09.2019	Marketperformer	HeidelbergCement	21.01.2020	Outperformer	Tesco	24.04.2019	Marketperformer
AIB Group	23.05.2019	Underperformer	Henkel	02.12.2019	Underperformer	Tesco	10.04.2019	Outperformer
AIB Group	07.05.2019	Marketperformer	Hochtief	23.01.2020	Marketperformer	thyssenkrupp	10.05.2019	Underperformer
Airbus	02.12.2019	Marketperformer	Hochtief	09.09.2019	Outperformer	Total	11.09.2019	Marketperformer
Akzo Nobel	24.04.2019	Underperformer	HSBC Holdings	18.09.2019	Marketperformer	Toyota Motor	02.12.2019	Marketperformer
Allianz	30.10.2019	Underperformer	HSBC Holdings	23.05.2019	Underperformer	Turkey	12.04.2019	NR
America Movil	17.07.2019	Outperformer	HSBC Holdings	03.05.2019	Marketperformer	UBS Group	18.09.2019	Underperformer
Amgen	28.11.2019	Marketperformer	Hungary	12.04.2019	NR	UBS Group	25.06.2019	Outperformer
Anglo American PLC	22.02.2019	Underperformer	HYPONOE	02.12.2019	Underperformer	Unicredit	30.08.2019	Outperformer
Apple	04.02.2020	Outperformer	Iberdrola	25.04.2019	Underperformer	Unicredit	03.06.2019	Underperformer
AT&T	02.12.2019	Marketperformer	IBM	02.12.2019	Outperformer	Unicredit	27.03.2019	Marketperformer
Australia and New Zealand Banking Group	18.09.2019	Marketperformer	Indonesia	12.04.2019	NR	Unilever N.V.	12.02.2020	Underperformer
Austria	29.08.2019	Underperformer	ING Groep	18.09.2019	Underperformer	Vale	09.04.2019	Outperformer
Austria	25.06.2019	Marketperformer	Intesa Sanpaolo	30.08.2019	Outperformer	Vattenfall	02.12.2019	Marketperformer
AXA	02.12.2019	Marketperformer	Intesa Sanpaolo	03.06.2019	Underperformer	Veolia Environnement	02.12.2019	Underperformer
Bank of America	18.09.2019	Marketperformer	Intesa Sanpaolo	27.03.2019	Marketperformer	Vodafone Group	14.06.2019	Marketperformer
Bank of America	25.06.2019	Outperformer	Israel	12.04.2019	NR	Vodafone Group	27.02.2019	Underperformer
Bank of Ireland Group	13.12.2019	Marketperformer	Italy	29.08.2019	Outperformer	Wells Fargo	02.12.2019	Marketperformer
Bank of Ireland Group	18.09.2019	Underperformer	Italy	03.06.2019	Underperformer	Westpac Banking Corp.	18.09.2019	Marketperformer
Bank of Ireland Group	11.09.2019	Marketperformer	Italy	27.03.2019	Marketperformer	Zurich Insurance Group	29.11.2019	Underperformer
Bank of Ireland Group	23.05.2019	Underperformer	JPMorgan Chase & Co.	18.09.2019	Marketperformer			
Bank of Ireland Group	08.05.2019	Marketperformer	JPMorgan Chase & Co.	25.06.2019	Outperformer			
Bank of Nova Scotia	02.12.2019	Underperformer	KBC Groep	18.09.2019	Underperformer			
Bardays PLC	13.12.2019	Marketperformer	KBC Groep	25.06.2019	Outperformer			
Bardays PLC	23.05.2019	Underperformer	Koninklijke KPN	24.07.2019	Marketperformer			
Bardays PLC	25.04.2019	Marketperformer	Landesb. Baden-Württemberg	02.12.2019	Underperformer			
BASF	27.02.2019	Underperformer	Landesbank Hessen-Thüringen	02.12.2019	Underperformer			
Bayerische Landesbank	02.12.2019	Marketperformer	Linde PLC	06.05.2019	Underperformer			
BayWa	02.12.2019	Marketperformer	Lloyds Banking Group	13.12.2019	Marketperformer			
BayWa	06.05.2019	NR	Lloyds Banking Group	23.05.2019	Underperformer			
Belfius Bank	18.09.2019	Underperformer	Lloyds Banking Group	02.05.2019	Marketperformer			
Belfius Bank	25.06.2019	Outperformer	Merck KGaA	28.02.2019	Underperformer			
Belgium	19.11.2019	Marketperformer	Mexico	12.04.2019	NR			
Belgium	29.08.2019	Underperformer	Mondelez International	31.07.2019	Marketperformer			
Belgium	25.06.2019	Outperformer	Munich Re	02.12.2019	Underperformer			
Berlin Hyp	25.06.2019	Marketperformer	National Australia Bank	18.09.2019	Marketperformer			
BNP Paribas	02.05.2019	Underperformer	Nationwide Building Society	13.12.2019	Marketperformer			
BPCE	25.06.2019	Marketperformer	Nationwide Building Society	22.11.2019	Underperformer			
Brazil	12.04.2019	NR	Nestlé	02.12.2019	Marketperformer			
BT Group	11.09.2019	Underperformer	Netherlands	29.08.2019	Underperformer			
Bulgaria	12.04.2019	NR	Netherlands	25.06.2019	Marketperformer			
Carrefour	29.10.2019	Marketperformer	NORD/LB Girozentrale	02.12.2019	Marketperformer			
Carrefour	11.09.2019	Outperformer	Nordea Bank Abp	18.09.2019	Underperformer			
Carrefour	18.07.2019	Marketperformer	Nordea Bank Abp	25.06.2019	Outperformer			
Carrefour	27.05.2019	Outperformer	Novartis	02.12.2019	Marketperformer			
Caterpillar	02.12.2019	Marketperformer	Nykredit Realkredit	02.12.2019	Underperformer			
Chile	12.04.2019	NR	OMV	02.12.2019	Underperformer			
Citigroup	02.12.2019	Marketperformer	OP Corporate Bank	18.09.2019	Underperformer			
Colombia	12.04.2019	NR	OP Corporate Bank	25.06.2019	Outperformer			
Commonwealth Bk of Australia	18.09.2019	Marketperformer	Orange	21.02.2019	Marketperformer			
Cooperatieve Rabobank UA	18.09.2019	Underperformer	Peru	12.04.2019	NR			
Cooperatieve Rabobank UA	25.06.2019	Outperformer	Petrobras	02.08.2019	Marketperformer			
Crédit Agricole	25.06.2019	Marketperformer	Peugeot SA	30.10.2019	Marketperformer			
Crédit Mutuel Arkéa SACC	25.06.2019	Outperformer	Pfizer	18.10.2019	Marketperformer			
Credit Suisse Group	18.09.2019	Underperformer	Philippines	12.04.2019	NR			
Credit Suisse Group	25.06.2019	Outperformer	Poland	12.04.2019	NR			
Croatia	12.04.2019	NR	Portugal	25.06.2019	Marketperformer			
Czech Republic	12.04.2019	NR	Procter & Gamble	30.09.2019	Marketperformer			
Danone	25.07.2019	Underperformer	Renault	21.10.2019	Underperformer			
Danske Bank	28.11.2019	Underperformer	Renault	15.02.2019	Marketperformer			
DekaBank	02.12.2019	Marketperformer	Repsol	20.11.2019	Marketperformer			
Deutsche Bahn	01.04.2019	Outperformer	Rio Tinto Ltd.	02.12.2019	Outperformer			
Deutsche Bank	08.07.2019	Outperformer	RLB Niederösterreich	02.12.2019	Marketperformer			
Deutsche Bank	25.06.2019	Marketperformer	RLB Oberösterreich	23.10.2019	Marketperformer			
Deutsche Pfandbriefbank	25.06.2019	Marketperformer	Robert Bosch GmbH	02.12.2019	Underperformer			
Deutsche Pfandbriefbank	13.05.2019	Outperformer	Roche	11.02.2020	Marketperformer			
De Volksbank	18.09.2019	Underperformer	Roche	02.12.2019	Outperformer			
De Volksbank	25.06.2019	Outperformer	Romania	12.04.2019	NR			
Dexia Group	02.12.2019	Underperformer	Romania	19.03.2019	Marketperformer			
DNB Bank	18.09.2019	Underperformer	Royal Bank of Canada	02.12.2019	Underperformer			
DNB Bank	25.06.2019	Outperformer	Royal Bank of Scotland Group	13.12.2019	Marketperformer			
E.ON	17.09.2019	Marketperformer	Royal Bank of Scotland Group	23.05.2019	Underperformer			
Enel	03.06.2019	Underperformer	Royal Bank of Scotland Group	26.04.2019	Marketperformer			
ENGIE	02.12.2019	Marketperformer	Royal Dutch Shell	29.11.2019	Marketperformer			
ENI	03.06.2019	Underperformer	Russia	12.04.2019	NR			
ENI	25.04.2019	Marketperformer	RWE	02.12.2019	Marketperformer			
ENI	15.02.2019	Outperformer	Saint-Gobain	01.10.2019	Marketperformer			
Equinor	26.09.2019	Marketperformer	Sanofi	02.12.2019	Marketperformer			
Erste Group Bank	18.09.2019	Underperformer	SBAB Bank	02.12.2019	Underperformer			
EWE	02.12.2019	Marketperformer	Schlumberger	28.01.2020	Marketperformer			
Féd. des caisses Desjardins	02.12.2019	Marketperformer	SEB	18.09.2019	Underperformer			
Finland	19.11.2019	Underperformer	SEB	25.06.2019	Outperformer			
Finland	25.06.2019	Marketperformer	Siemens	01.08.2019	Marketperformer			
France	29.08.2019	Marketperformer	Siemens	10.05.2019	Outperformer			
France	25.06.2019	Outperformer	Société Générale	18.09.2019	Marketperformer			
Fresenius SE & Co. KGaA	31.07.2019	Marketperformer	South Africa	12.04.2019	NR			
Fresenius SE & Co. KGaA	20.02.2019	Outperformer	Sparebank 1 SMN	02.12.2019	Underperformer			
General Electric	11.11.2019	Marketperformer	Sparebank 1 SR-Bank	02.12.2019	Underperformer			
General Electric	16.08.2019	Underperformer	Sparebank 1 Østlandet	02.12.2019	Underperformer			
General Electric	25.02.2019	Outperformer	Sparebanken Vest	02.12.2019	Underperformer			
Germany	29.08.2019	Underperformer	Standard Chartered	02.12.2019	Marketperformer			
Germany	25.06.2019	Marketperformer	Svenska Handelsbanken	18.09.2019	Underperformer			
GlaxoSmithKline	09.09.2019	Marketperformer	Svenska Handelsbanken	25.06.2019	Outperformer			

1) – 12) Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

III. DISCLAIMER

1. This document is directed at **eligible counterparties** and **professional clients**. Therefore, it is not suitable for **retail clients unless** (a) it has been explicitly labelled as appropriate for retail clients or (b) is properly disseminated by an investment firm authorized in the European Economic Area (EEA) or Switzerland to retail clients, who evidently have the necessary knowledge and sufficient experience in order to understand and evaluate the relevant risks of the relevant evaluation and / or recommendations. It was prepared by DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main, Germany ('DZ BANK') and has been approved by DZ BANK only for dissemination to the aforementioned recipients in **Member States of the EEA and Switzerland**.

If this document is expressly marked as '**Financial Analysis**' in **sub-section 1.1** of the Mandatory Disclosures, its distribution to recipients is subject to the section International Restrictions of Use and these additional rules:

This document may only be brought into the **Republic of Singapore** by DZ BANK via the DZ BANK Singapore Branch, but not by other persons, and may only be disseminated there to 'accredited investors' and / or 'expert investors' and used by them.

It is neither allowed to provide Financial Analyses to customers in the **United States of America (USA)** nor to conclude corresponding transactions with them.

If this document is expressly marked as '**Other Research Information**' in **sub-section 1.1** of the Mandatory Disclosures, its dissemination to recipients is subject to these additional rules:

It is neither allowed to provide Other Research Information to customers in the **United States of America (USA)** nor to conclude corresponding transactions with them.

The dissemination of Other Research Information in the **Republic of Singapore** is in any case restricted to DZ BANK AG Singapore Branch.

In all before named countries, this document may only be distributed in accordance with the respective applicable laws and rules, and persons obtaining possession of this document should inform themselves about and observe such laws and rules.

2. This document is being handed over solely for information purposes and may not be reproduced, redistributed to other persons or be otherwise published in whole or in part. All copyrights and user rights to this document, also with regard to electronic and online media, remain with DZ BANK.

Whilst DZ BANK may provide hyperlinks to web sites of companies mentioned in this document, the inclusion of a link does not imply that DZ BANK endorses, recommends or guarantees any data on the linked page or accessible therefrom. DZ BANK accepts no responsibility whatsoever for any such links or data, nor for the consequences of its use.

3. This document is not to be construed as and does not constitute an offer, or an invitation to make an offer, to buy securities, other financial instruments or other investment objects.

Estimates, especially forecasts, fair value and / or price expectations made for the investment objects analyzed in this document may prove incorrect.

This may occur especially as a result of unpredictable risk factors.

Such risk factors are in particular, but not exclusively: market volatility, sector volatility, measures undertaken by the issuer or owner, the general state of the economy, the non-realizability of earnings and / or sales targets, the non-availability of complete and / or precise information and / or later occurrence of another event that could lastingly affect the underlying assumptions or other forecasts on which DZ BANK relies.

The estimates made should always be considered and evaluated in connection with all previously published relevant documents and developments relating to the investment object and to the relevant sectors and, in particular, capital and financial markets.

DZ BANK is under no obligation to update this document. Investors must inform themselves about the current development of business as well as of any changes in the business development of the companies.

During the validity period of an investment recommendation, DZ BANK is entitled to publish a further or other analysis based on other, factually-warranted or even missing criteria on the investment object.

4. DZ BANK has obtained the information on which this document is based from sources believed to be essentially reliable, but has not verified all of such information. Consequently, DZ BANK does not make or provide any represen-

tations or warranties regarding the preciseness, completeness or accuracy of the information or the opinions contained in this document.

Neither DZ BANK nor its affiliated companies accept any liability for disadvantages or losses incurred as a result of the distribution and / or use of this document and / or which are connected with the use of this document.

5. DZ BANK and its affiliated companies are entitled to maintain investment banking and business relationships with the company or companies that are the subject of the analysis contained in this document. Within the limits of applicable supervisory law, DZ BANK's research analysts also provide information regarding securities-related services and ancillary securities-related services.

Investors should assume that (a) DZ BANK and its affiliated companies are or will be entitled to engage in investment banking operations, security operations or other business transactions from or with the companies that are the subject of the analysis contained in this document, and that (b) analysts involved in the preparation of this document can generally be indirectly involved in the conclusion of such business transactions to the extent permitted by supervisory law. DZ BANK and its affiliated companies and their employees may have positions in securities of the analyzed companies or investment objects or effect transactions with these securities or investment objects.

6. The information and recommendations of DZ BANK contained in this document do not constitute any individual investment advice and, depending on the specific investment targets, the investment horizon or the individual financial situation, may therefore be unsuitable or only partially suitable for certain investors. In preparing this document DZ BANK has not and does not act in the capacity of an investment advisor to, or asset manager for, any person.

The recommendations and opinions contained in this document constitute the best judgment of DZ BANK's research analysts at the date and time of preparation of this document and are subject to change without notice as a result of future events or developments. This document constitutes an independent appraisal of the relevant issuer or investment objects by DZ BANK; all evaluations, opinions or explanations contained herein are those of the author of this document and do not necessarily correspond with those of the issuer or third parties. Any decision to effect an investment in securities, other financial instruments, commodities, merchandise or other investment objects should not be made on the basis of this document, but on the basis of independent investment analyses and methods as well as other analyses, including but not limited to information memoranda, sales or other prospectuses. This document can be no replacement for individual investment advice.

7. By using this document, in any form or manner whatsoever, or referring to it in your considerations and / or decisions, you accept the restrictions, specifications and regulations contained in this document as being exclusively and legally binding for you.

Additional Information of Markit Indices Limited

Neither IHS Markit, its affiliates or any third party data provider makes any warranty, express or implied, as to the accuracy, completeness or timeliness of the data contained herewith nor as to the results to be obtained by recipients of the data. Neither IHS Markit, its affiliates nor any data provider shall in any way be liable to any recipient of the data for any inaccuracies, errors or omissions in the IHS Markit data, regardless of cause, or for any damages (whether direct or indirect) resulting therefrom.

IHS Markit has no obligation to update, modify or amend the data or to otherwise notify a recipient thereof in the event that any matter stated herein changes or subsequently becomes inaccurate.

Without limiting the foregoing, IHS Markit, its affiliates, or any third party data provider shall have no liability whatsoever to you, whether in contract (including under an indemnity), in tort (including negligence), under a warranty, under statute or otherwise, in respect of any loss or damage suffered by you as a result of or in connection with any opinions, recommendations, forecasts, judgments, or any other conclusions, or any course of action determined, by you or any third party, whether or not based on the content, information or materials contained herein.

The prices quoted as well as the information on yields and spreads included in the texts and graphics based on IHS Markit data are updated figures from the previous evening.

¹⁾ – ¹²⁾ Important: Please read the references to possible conflicts of interest and disclaimers/disclosures at the end of this report.

Capital Markets Institutional Clients	Head of Capital Markets Institutional Clients	+49 – (0)69 – 74 47 – 69 62	H.-Theo Brockmann
Sales Institutional Clients	Head of Sales Financial Institutions	+49 – (0)69 – 74 47 – 45 36	Norbert Schäfer
	Head of Sales Banks/Central Banks	+49 – (0)69 – 74 47 – 12 70	Lars Carlsen
	Head of Sales Institutional Clients	+49 – (0)69 – 74 47 – 4 24 20	Tilo Sperling
	Head of Regional Clients	+49 – (0)69 – 74 47 – 34 32	Jörn Schneider
	Head of Sales Asia	+65 – 65 80 – 16 24	Anand Subramanian
Corporates	Head of Corporates	+49 – (0)69 – 74 47 – 23 69	Roland Weiß
	Head of Derivative Solutions Large Caps	+49 – (0)69 – 74 47 – 44 00	Tobias Strumpel
	Head of Derivative Solutions Small Caps	+49 – (0)69 – 74 47 – 44 26	Evelyne Thiessen
	Head of Derivative Solutions Small Caps, West	+49 – (0)2 11 – 7 78 – 21 55	Ralf Vogt
Debt Capital Markets	Head of Debt Capital Markets	+49 – (0)69 – 74 47 – 38 11	Friedrich Luithlen
	Head of SSA DCM	+49 – (0)69 – 74 47 – 17 10	Kai Poerschke
	Head of FIG DCM	+49 – (0)69 – 74 47 – 48 00	Joerg Mueller
	Head of Corporate DCM	+49 – (0)69 – 74 47 – 71 45	Bettina Streiter
	Head of MTN-Desk	+49 – (0)69 – 74 47 – 62 19	Maximilian Lainer