

Corporate Bonds

A Research Publication by DZ BANK AG

Methodological approach Credit Research Corporates

- » DZ Bank's Corporates Credit Research is aimed at the local cooperative banks (Volks- und Raiffeisenbanken), institutional clients in Germany and abroad as well as central banks; forwarding and making it available, by whatever means, to natural and legal persons as well as other institutions with place of domicile and/or business in the United States of America (USA) is inadmissible and prohibited. The research is generally not suitable for private clients.
- » The term "**Corporates**" refers to companies (excluding banks and insurance companies). Within DZ Bank's Corporates Credit Research, unsecured bonds of companies mainly from core Europe but also from non-European countries are examined and analysed within the framework of the "**Masterlist Corporate Bonds**". We issue an investment recommendation for the senior unsecured bonds of these issuers.
- » The term "**bonds**" in this context as well as in the following paragraphs relates exclusively to the respective issuer's **Euro-denominated fixed-interest senior unsecured bonds** of the respective issuer denominated in euros.
- » The analysis of corporate bonds essentially comprises two parts: An assessment of the issuer's creditworthiness and, based on this, an assessment of the relative attractiveness of the respective bonds, also taking into account the bond-specific and company-specific risks and the expected overall market performance. In doing so, we focus exclusively on the expected credit spread trend (asset swap spread) of unsecured fixed-interest bonds denominated in euros. Assessments of foreign currency bonds and the development of the yield curve are not included in our recommendations.

Our analyses do not include a credit rating within the meaning of Regulation (EC) No. 1060/2009 of 16 September 2009.

BONDS

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THEORETICAL BASIS

Our investment recommendations for bonds are based on our assessment of the development of the asset swap spreads of the bonds of the respective issuers relative to the market as a whole.

Investment recommendations based on ASW relative to the market as a whole

Asset Swap Spread (ASW)

In an asset swap, a fixed-rate bond is combined with an interest rate swap to synthetically create a virtually interest risk free bond. The yield of this bond can be stated as a pick-up above the relevant yield curve, in the case of Euro bonds the Euribor curve. This pick-up represents the credit spread and is an indicator of the credit risk of this bond.

SUPERORDINATE FACTORS

When carrying out single issuer analyses, the Credit Research analyst takes account of both issuer-specific analysis – described below – as well as superordinate aspects. These are factors of a general nature, which may influence an issuer's credit rating and the investment recommendation, which is calculated. The analyst responsible for the issuer in question correspondingly factors these elements into analysis of individual bonds, to ensure that the evaluations and recommendations of DZ BANK Research are based on identical criteria and are consistent in themselves.

Higher-level factors are taken into account

Relevant general conditions are the economic forecasts of DZ BANK Research. GDP growth rates and the components thereof, inflation rates, global economic data, and similar variables may be of importance when assessing the respective issuer. The DZ BANK Research interest rate forecast represents another general point of reference for the analysis of individual values and the resultant recommendations. Political aspects of a global or national nature also play a part. Global political uncertainty, wars, conflicts or problems in individual countries may also have an impact on the assessment of third issuers who are not directly involved, or on the resulting recommendation.

New regulatory standards, monetary policy, and other factors may also be of relevance when formulating an investment recommendation.

We also consider the general market risk evaluation. In the event of a general increase in risk appetite in the market, the credit spreads of the bonds of all issuers tend to fall, and under such conditions the bonds of issuers with lower credit ratings whose credit spreads are at relatively higher levels, tend to offer the largest profit from a "carry" and a tightening of credit spreads. Conversely, a deterioration in general market sentiment and growing risk aversion means that the credit spreads of the bonds of all issuers tend to widen, and under these conditions, the bonds of issuers with better ratings, whose credit spreads are relatively tight, tend to offer the largest profit (or respectively a smaller loss) from a "carry" and a widening of credit spreads.

The superordinate DZ BANK Research forecasts are taken into account by analysts when they analyse individual issuers. In so doing, the respective analyst has to gauge the impact of the core evaluations on the subject of the analysis.

RELEVANT FACTORS FOR THE CREDIT ANALYSIS OF CORPORATES

The credit analysis of corporates consists of several elements relating to various risk/opportunity aspects, which may lead, on the one hand, to a default or loss participation or, on the other hand, to market outperformance. The individual elements are analysed and evaluated individually by the analyst based on his/her expert knowledge. The depth of analysis here depends very heavily on the information published by individual companies.

The credit analysis is a multi-stage process

» **Analysis of the profit and loss account**

The analyst has access to a set of various figures to analyse the profit situation; these can be adapted to particular conditions to produce an analysis of the company's current situation.

On the profit side the analyst examines how successfully the company has performed, particularly in its core business. Exceptional factors have to be filtered out here in order to calculate the company's sustainable operating performance. However, an important, albeit not the only starting point here is the ratio of EBITDA adjusted for exceptional factors relative to sales revenue (EBITDA margin). The return on sales compares earnings after tax with sales revenue and is regarded as a benchmark for a company's overall economic success in a given accounting period. Unlike EBITDA, earnings after tax are not adjusted for exceptional factors. The return on equity (annual earnings/equity) in turn is used by the analyst as a gauge of the economic success of the capital employed. When analysing these figures, significant changes compared to previous periods are scrutinised more closely. In so doing the analyst also pays attention to how the scope/room for manoeuvre for the reporting of profit figures has been utilised.

Based on analysis of the actual situation, the analyst can then examine which income sources, regions and business areas are particularly relevant for the company in terms of its profits, how these have developed in the short and medium term and what the reasons were (e.g. exceptional factors or impetus provided by a typical sector cycle) in order to gain insight into how profits might develop in future.

A similar process is applied to expenditure. Here too the aim is to "understand" the company, and specifically to differentiate exceptional negative factors from recurrent factors to obtain an assessment relating to the expected future trend in expenditure.

» **Analysis of financial situation**

Analysis of a company's financial situation is aimed at determining the extent to which the type of financing selected, and the company's potential to generate financial resources, may lead to particular risks in future. This is particularly important because the company must generate sufficient cash flow to repay the corporate bond, i.e. to cover payments of interest and principal. Analysis of the financial situation is based, on the one hand, on a portfolio of financial data, which compares cash flows under various definitions with gross and/or net debt figures adjusted by the analyst. On the other hand, the cover ratio provided for Corporate Bonds interest payments by EBITDA (EBITDA/interest expenditure) gives an indication of a company's debt-servicing ability. In some industry sectors the cover ratio of net debt by EBITDA plays an important role to assess the credit worthiness of a company.

» Analysis of the liquidity situation

The credit analysis can also be rounded off with an assessment of the liquidity situation. Analysis of a company's liquidity focuses on the extent to which the company has sufficient liquid funds available to cover short-term liabilities. It also helps to identify to what extent the company's planned growth can be financed from its own internal resources or whether it will have to be funded by raising additional funds.

The elements listed above always relate to historic data. This makes it possible to identify possible trends.

Depending on the sector, a company's fundamental situation is heavily dependent on the macroeconomic trend. For example, a weakening of economic growth generally leads to lower consumer demand and reduces the scope to implement price increases. Analysts also therefore use future economic growth forecasts when assessing a company's credit standing.

Other important parameters are respective sector trends, for example cyclicalities, technological developments within individual industries, identifying regional growth markets or, more generally, the expected trend in demand for products from the particular sector.

A number of other factors are also crucial to a company's fundamental performance, and these are also taken into account in the analysis. These include a number of company-specific factors, for example the company's size, its market position and pricing power, competitive conditions, geographic and product diversification, R&D competence or legal/regulatory aspects (e.g. possible risks relating to product liability in the pharmaceutical industry, legal risks, contract risks in the construction industry, the energy transition in the utilities sector).

Based on the quantitative and qualitative components of his analysis listed above, the analyst forms his opinion on the company's current and future bonuses. The credit rating reflects the degree of the issuer's ability and willingness to meet its payment obligations now and in the future.

RELEVANT FACTORS FOR INVESTMENT RECOMMENDATIONS

In Fixed Income Research, recommendations on individual issuers are divided into the categories "Outperformer" and/or (▲), "Underperformer" and/or (▼) and "Marketperformer" and/or (►). The decisive factor for the investment recommendation for an issuer is whether, according to the analyst's assessment, its bonds will perform better, worse or in step with the bonds of comparable issuers in the following six months. "Outperformer" means that the issuer's bonds are expected to perform better than those of comparable issuers. "Underperformer" means that the issuer's bonds are expected to perform worse than the bonds of comparable issuers. "Marketperformer" means that, in the opinion of the analyst, the development of the bonds of the issuer will not differ significantly from the development of the bonds of the comparable issuers.

Recommendation:

- Outperformer (▲)
- market performer (►)
- Underperformer...

The recommendation categories "Outperformer", "Underperformer" and "Marketperformer" are based on the analyst's assessment of how the bonds of the respective issuer are performing relative to those of comparable issuers (peer group). The peer group does not need to be precisely defined; it generally comprises the issuers in the relevant market segment analyzed by DZ BANK Research.

..., depends on the assessment of how the issuer performs relative to its peers

The performance of the bonds expected by the analyst is based on various components. In addition to the ongoing interest return on the bonds, it is the development of the asset swap spreads of all the bonds of the respective issuer. This may be constant over the period under consideration, it may rise or fall. Decreasing spreads would be positive for the investor. If the premium for entering into the credit risk falls, the bonds of the issuer in question show a better development than the swap market, all other things being equal. The analyst must then decide, taking into account the development of the peer group's bond universe, whether he believes that the bonds of the relevant issuer are performing better, equal or worse.

The basis for the decision is the analyst's assessment of the issuer's creditworthiness. In general, it depends on whether he forecasts an improvement or deterioration in creditworthiness, whether the capital markets expect this, or whether the occurrence of his expectations would come as a surprise to the majority of market participants. Other factors are also taken into account: the analyst considers how general economic developments, central bank policy, geopolitical risks and the behaviour of the capital markets will affect the spreads of the issuer under review in the coming months (see above).

Investment recommendations are therefore issued on a combination of **fundamental** and **relative value analysis**. The basis for issuing investment recommendations is provided by the credit analysis/fundamental analysis described above, which enables an approximate assessment of the default risk of an issuer or the risk of creditors sharing in the loss. However, DZ BANK Research does not produce a "fair" absolute credit spread level derived from fundamental data, which would be used to recommend an issuer's bonds for investment. Rather, the evaluation is carried out by comparing the risks perceived by DZ BANK for all the bonds of the respective issuers with the risks for comparable bonds of other issuers, taking into account the respective credit spreads. **The investment recommendation is therefore a relative assessment**, i.e. the analyst must not only keep an eye on the issuers he analyses, but also on comparable issuers.

SOURCES: DATA, STUDIES, INFORMATION

- » Corporate bond analysts use a wide range of data and information. The fundamental analysis is primarily based on the original company reports published by the company. A number of other sources of information are also used, including reports from the rating agencies Moody's, S&P and Fitch, as well as news from Bloomberg, Reuters and other media.
- » As the assessment of a company's expected fundamental development is mainly determined by future economic developments in the core markets in which the company operates, analysts also rely on forecasts and expectations in this regard from the relevant analysts at DZ BANK, as well as from other sources.
- » Analysts mainly obtain data on market indicators, mainly bond and index data, primarily from Bloomberg, Reuters, Markit and Dealogic.

Broad spectrum of data and information

Market, bond and index data primarily from Bloomberg, Reuters, Markit and Dealogic

Since the analysis of issuers/corporate bonds is extremely complex, it is necessary to filter out the relevant information from the existing abundance of data, which ultimately decides on the development of a corporate bond.

I. IMPRINT

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- 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 return/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.

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

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

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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-month 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.

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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	GRENKE	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	thysenskrupp	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			
Barclays PLC	13.12.2019	Marketperformer	KBC Groep	25.06.2019	Outperformer			
Barclays PLC	23.05.2019	Underperformer	Koninklijke KPN	24.07.2019	Marketperformer			
Barclays 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			
Coöperatieve Rabobank UA	18.09.2019	Underperformer	Peru	12.04.2019	NR			
Coöperatieve 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			

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