

PERSPECTIVES Viewpoint Equity

Time to act: Europe's possible Defence Initiative

March 4, 2025

Authors:

Dr. Ulrich Stephan, Chief Investment Officer Germany Dr. Dirk Steffen, Chief Investment Officer EMEA Wolf Kisker, Senior Investment Strategist Marvin Skora, Equity Specialist

Key takeaways

- In order to quickly become capable of defending itself, while reducing the trade surplus with the U.S., Europe will have to rely on U.S. supplies in the short term. At the same time, Europe needs to consolidate and develop its own defence sector. According to the European Commission, at least 50% of all military procurement is to take place within the EU by 2030 and 60% by 2035.
- According to the Kiel Institute for the World Economy, debtfinanced investments in domestic defence technology research and development, and in the production of stateof-the-art military equipment, can increase productivity. Short-term economic stimulus could enable higher longterm economic growth and via positive spillover effects this could lead to increased potential growth.
- European defence stock prices have increased by around 46% in the past twelve months and are no longer cheaply valued. Nevertheless, they are likely to have upward potential in the medium term under a European Defence Initiative. However, investors should also consider sector-specific characteristics when selecting single stocks.

Turning point

On 27 February 2022, Chancellor Olaf Scholz's "Zeitenwende speech" to the German Bundestag attracted international attention. Three days earlier, Russian troops had invaded Ukraine. Since then, the issue of European defence has been at the centre of political debate. After the new U.S. administration under President Donald Trump and Vice President J.D. Vance signalled the end of U.S. defence guarantees for Europe, confidence in the U.S. as a reliable partner alongside Europe appears to be severely damaged.

The pressure on Europe to significantly increase its defence spending has increased noticeably. The need to strengthen European defence should not remain a one-off effect. For too long, many European states have been relying on the U.S. as a protector. Now change is afoot. Not only has Germany set up a special fund, but the Draghi report also recommends increasing funding at a European level. European defence spending is expected to remain high in the coming years. Please use the QR code to access a selection of other Deutsche Bank CIO reports www.deutschewealth.com.



British Prime Minister Keir Starmer recently announced the largest increase in British defence spending since the end of the Cold War. Three years ahead of schedule, the defence budget is projected to rise to 2.5% of the UK GDP by 2027, and 3% by 2034. German politics is also on the move after the early Bundestag elections on 23 February this year. Among other things, the increase of the "special funds" for infrastructure and Bundeswehr of up to EUR400bn each will be discussed.

Possibilities of an EU Defence Initiative

Statements by various European politicians also indicate a growing willingness to develop a coherent European strategy, including greater acceptance of joint defence financing.

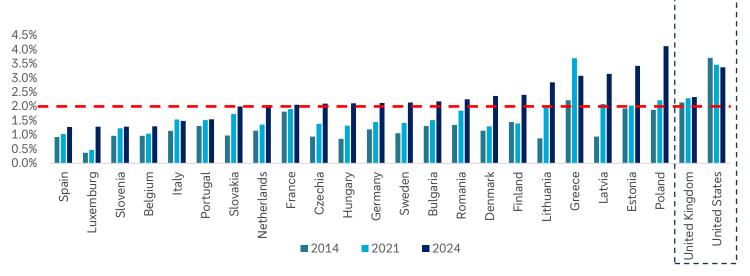
The European Commission has already responded by proposing a relaxation of European debt rules. While proposals of up to 5% of GDP were circulating for defence, the new NATO strategy could amount to 3-4%. In 2023, the GDP of the NATO countries excluding the U.S. was almost EUR23tn. So defence spending of 3.5% of GDP would amount to more than EUR800bn per year.

While national resources have been the main source of defence spending, many Member States are financially constrained by high public debt and deficits. One way to circumvent the "3% deficit rule" under EU rules would be to consider defence spending as a "relevant factor." In addition, the national escape clause allows Member States to derogate from EU fiscal rules in exceptional cases.

In the longer term, a sustainable defence strategy can only be ensured through common European financial instruments. The debate on adjusting EU debt rules is likely to gain momentum, especially in the event of a geopolitical spike.

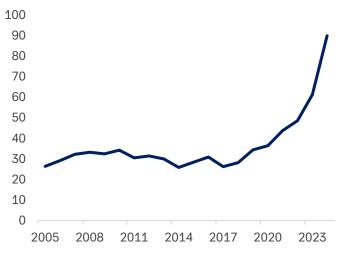


Figure 1: NATO: EU-States + United Kingdom + U.S. Defence expenditure, % GDP (2015 prices)



Source: NATO, Deutsche Bank. Data as of February 28, 2025.

Figure 2: Defence Equipment Procurement , EUR bn (2023 prices)



Source: European Defence Agency, Deutsche Bank. Data as of February 2025.

Various options are under discussion, including whether they involve repurposing existing funding programs or creating new ones:

Figure 3: Financing under existing facilities

EU-Cohesion Fund	RRF	NGEU	
Up to EUR60bn	EUR95bn	EUR100bn (for 7 years)	
Reassignment of existing funds	Reassignment of unused funds of the Recovery and Resilience Facility (RRF)	Reassignment of the long-term NextGenerationEU- programme (2028-2034)	
Policy refinement via the EU commission	unanimous decision of the EU Council	unanimous decision of the EU Council	

Source: Deutsche Bank. Data as of February 28, 2025.

Figure 4: Financing via new facilities

"SURE 2.0"	"RRF 2.0"	ESM	SPV	
Up to EUR100bn	Open	EUR240bn	Up to EUR500bn	
Funds for defence expenditure, similar to the existing EU program SURE (Support to mitigate Unemployment Risks in an Emergency) to support national social expenditure,	New EU debt for defence	Creation of a new ESM credit line (European Stability Mechanism)	Establishment of an intergovernmental fund (Special Purpose Vehicle) to which the participating EU countries pay directly	
Issuance requires unanimous decision of the EU Council Issue requires all EU members to guarantee	Unanimous decision of the EU Council and ratification by all national parliaments	Unanimous decision of all EU countries, with a possible extension to non-EU countries	Voluntary participation, possible extension to non-EU countries	

Source: Deutsche Bank. Data as of February 28, 2025.

Political and organisational challenges are considerable:

- Not least the political constellations in France and Germany make it difficult to imagine joint finance solutions at EU level that require qualified parliamentary majorities. But a sustained strengthening of the common deterrent capability requires more than the acceptance of sustainable financing.
- Equally important are forward planning and coordination of defence spending and, in the medium term, the establishment and development of appropriate production infrastructure throughout the European continent. Otherwise, there is a risk of inefficient use of funds for more expensive, less effective and poorly integrated systems, with the risk of cost inflation.

Spillover effects

If a European alliance is successful, targeted defence spending could not only contribute to strategic security as the basis of economic prosperity but could also contribute to the long-term potential growth of European economies beyond short-term economic effects, provided that the funds are channelled into infrastructure, research and development (R&D) and production from European sources.

Europe is still a long way away from that. Since the start of the Russia-Ukraine war in 2022, the EU states have awarded a large proportion of their defence contracts to manufacturers outside the EU – according to calculations by the IRIS think tank, around 78% by June 2023 (with a significant proportion of U.S. companies). Little will change in the short term. In order to become defendable quickly and at the same time reduce the trade surplus with the U.S., Europe will first have to continue to rely primarily on U.S.-produced armaments. At the same time, however, the European defence sector needs to be consolidated and developed as soon as possible.

In March 2024, the European Commission presented a new

strategy for the defence industry with the aim of strengthening the European defence industry and reducing dependence on non-European suppliers. According to this, at least half of all military procurement is to take place within the EU by 2030. By 2035, this proportion is set to rise to 60%.

The efficiency of future defence depends to a large extent on the level of investment in new capabilities, i.e. research and technology (R&T). According to the European Defence Agency (EDA), investment in R&T increased significantly between 2008 and 2016 after a period of insufficient spending. According to EDA, total expenditure on defence R&T in 2023 amounted to EUR4bn, which represents a real increase of 8% compared with 2022. In 2023, 61 military R&D projects were launched under the European Defence Fund (EDF), with a total volume of EUR1.15bn.

In a recent study, the Kiel Institute for the World Economy (IfW) examines the economic impact of increasing defence spending in Europe. The experts argue for debt-financed rather than tax-financed increases in defence spending, and disagree with the classic "gun-or-butter" argument that higher defence spending is bound to come at the expense of private consumption and the civilian economy.

If more investment were made in domestic R&D and in the production of state-of-the-art military equipment, an increase of defence spending by 1% could increase the economy's productivity by 0.25 percentage points according to the IfW. This could add to potential growth and thus enable a higher growth path in the long run. In addition, there may be investment in infrastructure that can be used both by militarily and civilians, such as railways, roads and ports. A stronger industrial base is also expected to reduce dependence on international supply chains, thereby strengthening Europe's overall economic resilience. Under these conditions, a debtfuelled increase in defence spending from 2% to 3.5% of GDP could boost economic growth by 0.9%-1.5% per year, according to IfW.



Defence industry specifics

From an investor perspective, the selection of defence industry companies shall include other aspects of the assessment, in addition to the financial analysis of the company data.

- **High barriers to entry**: The defence sector has high barriers to entry compared to other civilian sectors. This is due, among other things, to the close integration with state institutions, the strict regulatory requirements and the complex development processes for military technologies.
- Concentrated customer base and policy drivers: Compared to many civilian industries, the number of potential customers for defence products is very limited, increasing defence contractors' dependence on large orders. In addition, strategic and defence policy decisions of the respective governments must be taken into account.
- **Technology as a key competitive factor:** The defence industry is one of the most technologically demanding industries in the world. From armored vehicles to the latest generation of fighter jets, almost all military systems are equipped with state-of-the-art technology. Without continued investment in R&D, defence companies risk losing touch with technological competition.
- **Cooperations and joint ventures:** Cooperations and joint ventures are commonplace in the defence industry. Companies are not only competitors, but often also mutual suppliers. Within the framework of cooperation, R&D resources can be pooled and used more efficiently. This could create opportunities for the more fragmented European market compared to the U.S. After all, FCAS (France, Spain, Germany) and Tempest (United Kingdom) have joined two consortia to develop the next generation of military aircraft. The MGCS project is also a consortium for the development of a European tank. Further cooperation is expected.
- **Regulatory and legal complexity:** Unlike in civilian industries, defence companies typically receive monthly advance payments for ongoing projects. While this ensures liquidity, it also increases the burden of regulatory control and management of these funds. The organization of the EU in nation states and the associated regulatory and legal diversity increase the complexity of transnational armament projects. In particular, in the case of long-term government contracts, price adjustment clauses are not uncommon and can have a significant impact on the profitability of defence companies in individual cases.
- Long product lifecycles: From an investor's perspective, the product lifecycles of many military systems are likely to be particularly interesting, in some cases exceptionally long compared to the civilian manufacturing industry. Learning effects can be better exploited in long-running productions, reducing manufacturing costs and increasing profit margins. Established companies benefit from comparatively stable and reliable cash flows. However, defence companies that are not included in key tenders risk being forced out of the market in the absence of adequate procurement programs in place in a timely manner.

Supply chain structure

Due to the high level of technology and the strategic importance of the sector, the supply chains of the sector are characterized by high technological requirements, strict regulatory requirements and geopolitical factors. Many military technologies have civil applications and vice versa ("dual-use"). Companies in the supply chain are therefore subject to strict export controls.

At the same time, defence companies and governments are seeking to reduce their dependencies by relying more on domestic production and suppliers. Similar to the automotive industry, the industry is characterized by a limited number of large companies (so-called "prime contractors") and a large number of highly specialized suppliers (so-called "tier 1, tier 2 and tier 3 suppliers"):

- Governments and public procurement authorities are the main customers and often determine the development of new weapons systems and award contracts for military platforms in direct consultation with the prime contractors.
- **Prime Contractors** are the prime contractors for large defence projects, coordinating R&D, production, and maintenance and service of complex weapons systems.
- **Tier 1 suppliers** are typically larger companies (often prime contractors) that supply core components for larger and more complex weapons systems, such as engines, avionics, radar systems, and gearboxes for armored vehicles.
- **Tier 2 and Tier 3 suppliers** often manufacture smaller, highly specialized (sub)components or materials such as cable systems, titanium alloys, semiconductors or optical devices.
- **Suppliers of raw materials** supply the defence industry with various industrial metals, such as steel, aluminium, titanium, lithium and cobalt and rare earths.

Market reactions and outlook

While the prices of U.S. defence companies have tended to consolidate recently, the prices of European defence equipment manufacturers are increasing. Recent statements by the new U.S. Secretary of Defence, Pete Hegseth, and the austerity measures imposed by Elon Musk's Department of Government Efficiency (DOGE) in other areas have recently raised concerns among investors that future defence assets could also come under the spotlight.

With regards to the European defence industry, the extent to which companies specialise in defence or offer a wider range of products must be taken into account. Moreover, the European market is more fragmented than the U.S. market, which is dominated by some large companies.

In principle, the chances for European defence companies seem to be good, even if the industry index "STOXX Europe Total Market Aerospace and Defence" is currently quoted at an all-time high after a performance of 46% in the last twelve months and is not rated cheaply by historical comparison. The price-to-earnings ratio of 21.8 (based on expected earnings for the next twelve months) is about 10% above its own tenyear average of 19.7.

/

In the case of an increase in European defence spending, analysts have already begun to adjust their sales and profit forecasts for European defence companies from 2% to 3%. For 2025, the consensus currently expects sales and profit increases of 14% and 22% respectively, for the following years 2026 (12% / 20%) and 2027 (11% / 18%) with a slightly declining momentum.

Potential non-European markets could also play a role in the future. In the ten years from 2014 to 2024, defence spending in India, Japan, South Korea, and Australia grew cumulatively by almost 6% per year. For these countries, analysts expect a growing momentum in the coming years, as well as for the Middle East.

Last but not least, expected investments in infrastructure (including ports, roads, railways) should also benefit civil industrial assets.

Figure 5: Outperformance of European defence stocks Price performance of European aerospace and defence stocks in EUR, excluding dividends, indexed 0=01.01.2020





Glossary

The **Department of Government Efficiency (DOGE)** is formed in the second Donald Trump administration aimed to reduce federal spending.

The **EU Cohesion Fund** helps EU Member States with a per capita gross national income of less than 90 per cent (EU-27 average) to strengthen the EU's economic, social and territorial cohesion.

EUR is the currency code for the euro, the currency of the Eurozone.

The European Commission (EC) is the executive body of the European Union (EU) representing the interests of the EU as a whole.

The European Defence Agency (EDA) supports the development of military resources in the 27 Member States.

The **European Defence Fund (EDF)** supports Community efforts and cross-border cooperation between public and private bodies such as enterprises (including small and medium-sized enterprises), universities and research and technology organizations in the EU.

Gross domestic product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

NATO (North Atlantic Treaty Organization) is a defence alliance with a total of 31 European and North American member states.

Price/earnings (P/E) ratios measure a company's current share price relative to its per-share earnings.

The **Recovery and Resilience Facility (RRF)** is a tool within the **NextGenerationEU program** to provide financial assistance and loans for reforms and investments in EU Member States. These funds are performance-based, i.e. they are only issued when the Member State concerned has achieved milestones and targets in the implementation of the planned reforms and investments.

SPV (Special Purpose Vehicle) are a sort of investment instruments set up for a specific purposes.

In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk. This document was produced in March 2025.



Appendix

Historical performance

	3.3.2020 - 3.3.2021	3.3.2021 - 3.3.2022	3.3.2022 - 3.3.2023	3.3.2023 - 3.3.2024	3.3.2024 - 3.3.2025
Performance					
STOXX Europe 600	8.5%	5.8%	6.2%	7.2%	12.0%
STOXX Europe Total Market Aerospace and Defence	-12.8%	8.0%	26.1%	38.6%	39.7%

Source: Deutsche Bank AG, Bloomberg Finance L.P., LSEG Datastream; Data as of March 03, 2025.



General

This document may not be distributed in Canada or Japan. This document is intended for retail or professional clients only. This document is being circulated in good faith by Deutsche Bank Aktiengesellschaft, its branches (as permitted in any relevant jurisdiction), affiliated companies and its officers and employees (collectively, "Deutsche Bank").

This material is for your information only and is not intended as an offer, or recommendation or solicitation of an offer to buy or sell any investment, security, financial instrument or other specific product, to conclude a transaction, or to provide any investment service or investment advice, or to provide any research, investment research or investment recommendation, in any jurisdiction, but is intended solely for information purposes. The information does not replace advice tailored to the individual circumstances of the investor.

All materials in this communication are meant to be reviewed in their entirety.

If a court of competent jurisdiction deems any provision of this disclaimer unenforceable, the remaining provisions will remain in full force and effect. This document has been prepared as a general market commentary without consideration of the investment needs, objectives or financial circumstances of any particular investor. Investments are subject to market risks which derive from the instrument or are specific to the instrument or attached to the particular issuer. Should such risks materialise, investors may incur losses, including (without limitation) a total loss of the invested capital. The value of investments can fall as well as rise and you may not recover the amount originally invested at any point in time. This document does not identify all the risks (direct or indirect) or other considerations which may be material to an investor when making an investment decision.

This document and all information included herein are provided "as is", "as available" and no representation or warranty of any kind, express, implied or statutory, is made by Deutsche Bank regarding any statement or information contained herein or in conjunction with this document. To the extent permissible under applicable laws and regulations, we are making no representation as to the profitability of any financial instrument or economic measure. All opinions, market prices, estimates, forward looking statements, hypothetical statements, forecast returns or other opinions leading to financial conclusions contained herein reflect Deutsche Bank's subjective judgment as of the date of this document. Without limitation, Deutsche Bank does not warrant the accuracy, adequacy, completeness, reliability, timeliness or availability of this communication or any information in this document and expressly disclaims liability for errors or omissions herein. Forward looking statements involve significant elements of subjective judgments and analyses and changes thereto and/or consideration of different or additional factors could have a material impact on the results indicated. Therefore, actual results may vary, perhaps materially, from the results contained herein.

Unless otherwise indicated in this document, all statements of opinion reflect the current assessment of Deutsche Bank, which may change at any time. Deutsche Bank does not assume any obligation to either update the information contained in this document or inform investors about available updated information. The information contained in this document is subject to change without notice and based on a number of assumptions, estimates, opinions and hypothetical models or analyses which – although, From the Bank's current point of view are based on adequate information – may not prove valid or turnout in the future to be accurate or correct and may be different from conclusions expressed by other departments within Deutsche Bank. Although the information contained in this document has been derived from sources that Deutsche Bank considers trustworthy and reliable, Deutsche Bank does not guarantee the completeness, fairness, or accuracy of the information and it should not be relied upon as such. This document may provide, for your convenience, references to websites and other external sources. Deutsche Bank takes no responsibility for their content and their content does not form any part of this document. Accessing such external sources is at your own risk.

To the extent permissible under applicable laws and regulations, this document is for discussion purposes only and is not intended to create any legally binding obligations on Deutsche Bank and Deutsche Bank is not acting as your financial advisor or in a fiduciary capacity unless otherwise expressly agreed by Deutsche Bank in writing. Before making an investment decision, investors need to consider, with or without the assistance of a financial professional, whether any investments and strategies described or provided by Deutsche Bank, are appropriate, in light of the investor's particular investment needs, objectives, financial circumstances, the possible risks and benefits of such investment decision. When making an investment decision, potential investors should not rely on this document but only on what is contained in the final offering documentation relating to the investment. As a global financial services provider, Deutsche Bank from time to time faces actual and potential conflicts of interest. Deutsche Bank's policy is to take all appropriate steps to maintain and operate effective organisational and administrative arrangements to identify and manage such conflicts. Senior management within Deutsche Bank are responsible for ensuring that Deutsche Bank's systems, controls and procedures are adequate to identify and manage conflicts of interest. Deutsche Bank does not give tax or legal advice, including in this document, and nothing in this document should be interpreted as Deutsche Bank providing any person with any investment advice. Investors should seek advice from their own tax experts, lawyers, and investment advisers in considering investments and strategies described by Deutsche Bank. Unless notified to the contrary in a particular case, investment instruments are not insured by any governmental entity, not subject to deposit protection schemes and not guaranteed, including by Deutsche Bank. This document may not be reproduced or circulated without Deutsche Bank's express written authorisation. Deutsche Bank expressly prohibits the distribution and transfer of this material to third parties. Deutsche Bank accepts no liability whatsoever arising from the use or distribution of this material or for any action taken or decision made in respect of investments mentioned in this document which the investor may have made or may make in the future.

The manner of circulation and distribution of this document may be restricted by law or regulation in certain countries, including, without limitation, the United States. This document is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country, or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would subject Deutsche Bank to any registration or licensing requirement within such jurisdiction not currently met. Persons into whose possession this document may come are required to inform themselves of, and to observe, such restrictions. Past performance is no



guarantee of future results; nothing contained herein shall constitute any representation, warranty, or prediction as to future performance. Further information is available upon investor's request.

Deutsche Bank AG is a stock corporation ("Aktiengesellschaft") incorporated under the laws of the Federal Republic of Germany with its head office in Frankfurt am Main. It is registered with the district court ("Amtsgericht") in Frankfurt am Main under number HRB 30 000and licensed to carry out banking business and to provide financial services. Supervisory authorities are the European Central Bank ("ECB"), Sonnemannstraße 22, 60314 Frankfurt am Main, Germany (www.ecb.europa.eu) and the German Federal Financial Supervisory Authority ("Bundesanstalt für Finanzielestungsaufsicht" or "BaFin"), Graurheindorfer Straße 108, 53117 Bonn and Marie-Curie-Straße 24-28, 60439 Frankfurt am Main(www.bafin.de), and by the German Central Bank ("Deutsche Bundesbank"), Wilhelm-Epstein-Straße 14, 60431 Frankfurt am Main (www.bundesbank.de).

This document has neither been submitted to nor reviewed or approved by any of the above or below mentioned supervisory authorities.

For Residents of the United Arab Emirates

This document is strictly private and confidential and is being distributed to a limited number of investors and must not be provided to any person other than the original recipient, and may not be reproduced or used for any other purpose. By receiving this document, the person or entity to whom it has been issued understands, acknowledges and agrees that this document has not been approved by the UAE Central Bank, the UAE Securities and Commodities Authority, the UAE Ministry of Economy or any other authorities in the UAE. No marketing of any financial products or services has been or will be made from within the United Arab Emirates and no subscription to any funds, securities, products or financial services may or will be consummated within the United Arab Emirates. This does not constitute a public offer of securities in the UAE Arab Emirates in accordance with the Commercial Companies Law, Federal Law No. 2 of 2015 (as amended from time to time) or otherwise. This document may only be distributed to "Professional Investors", as defined in the UAE Securities and Commodities Authority's Rulebook on Financial Activities and Reconciliation Mechanism (as amended from time to time).

For Residents of Kuwait

This document has been sent to you at your own request. This presentation is not for general circulation to the public in Kuwait. The Interests have not been licensed for offering in Kuwait by the Kuwait Capital Markets Authority or any other relevant Kuwait government agency. The offering of the Interests in Kuwait on the basis a private placement or public offering is, therefore, restricted in accordance with Decree Law No. 31 of 1990 and the implementing regulations thereto (as amended) and Law No. 7 of 2010 and the bylaws thereto (as amended). No private or public offering of the Interests is being made in Kuwait, and no agreement relating to the sale of the Interests will be concluded in Kuwait. No marketing or solicitation or inducement activities are being used to offer or market the Interests in Kuwait.

For Residents of the Kingdom of Saudi Arabia

This document may not be distributed in the Kingdom except to such persons as are permitted under the Investment Fund Regulations issued by the Capital Market Authority. The Capital Market Authority does not take any responsibility for the contents of this document, does not make any representation as to its accuracy or completeness, and expressly disclaims any liability whatsoever for any loss arising from, or incurred in reliance upon, any part of this document. Prospective subscribers of the securities should conduct their own due diligence on the accuracy of any information relating to securities. If you do not understand the contents of this document, you should consult an authorised financial adviser.

For Residents of Qatar

This document has not been filed with, reviewed or approved by the Qatar Central Bank, the Qatar Financial Markets Authority, the Qatar Financial Centre Regulatory Authority or any other relevant Qatari governmental body or securities exchange or under any laws of the State of Qatar. This document does not constitute a public offering and is addressed only to the party to whom it has been delivered. No transaction will be concluded in Qatar and any inquiries or applications should be received, and allotments made, outside Qatar.

For Residents of the Kingdom of Bahrain

This document does not constitute an offer for sale of, or participation in, securities, derivatives or funds marketed in Bahrain within the meaning of Bahrain Monetary Agency Regulations. All applications for investment should be received and any allotments should be made, in each case from outside of Bahrain. This document has been prepared for private information purposes of intended investors only who will be institutions. No invitation shall be made to the public in the Kingdom of Bahrain and this document will not be issued, passed to, or made available to the public generally. The Central Bank (CBB) has not reviewed, nor has it approved, this document or the marketing of such securities, derivatives or funds in the Kingdom of Bahrain.

For Residents of South Africa

This document does not constitute or form a part of any offer, solicitation or promotion in South Africa. This document has not been filed with, reviewed or approved by the South African Reserve Bank, the Financial Sector Conduct Authority or any other relevant South African governmental body or securities exchange or under any laws of the Republic of South Africa.

For Residents of Belgium

This document has been distributed in Belgium by Deutsche Bank AG acting though its Brussels Branch. Deutsche Bank AG is a stock corporation ("Aktiengesellschaft") incorporated under the laws of the Federal Republic of Germany and licensed to carry on banking business and to provide financial services subject to the supervision and control of the European Central Bank ("ECB") and the German Federal Financial Supervisory Authority ("BaFin"). Deutsche Bank AG, Brussels Branch, is also supervised in Belgium by the Financial Services and Markets Authority ("FSMA", www.fsma.be). The branch has its registered address at Marnixlaan 13-15, B-1000 Brussels and is registered under number VAT BE 0418.371.094, RPM/RPR Brussels. Further details are available on request or can be found at www.deutschebank.be.



For Residents of the United Kingdom

This document is a financial promotion as defined in Section 21 of the Financial Services and Markets Act 2000 and is approved by and communicated to you by DB UK Bank Limited. DB UK Bank Limited is a member of the Deutsche Bank group and is registered.at Company House in England & Wales with company number 315841 with its registered Office: 21 Moorfields, London, United Kingdom, EC2Y 9DB. DB UK Bank Limited is authorised by the Prudential Regulation Authority and is regulated by the Financial Conduct Authority and the Prudential Regulation Authority. DB UK Bank Limited's Financial Services Registration Number is 140848.

Deutsche Bank Aktiengesellschaft is incorporated in the Federal Republic of Germany and its members' liability is limited.

For Residents of Hong Kong

This material is intended for: Professional Investors in Hong Kong. Furthermore, this material is provided to addressee only, further distribution of this material is strictly prohibited. This document and its contents are provided for information only. Nothing in this document is intended to be an offer of any investment or a solicitation or recommendation to buy or to sell an investment and should not be interpreted or construed as an offer, solicitation, or recommendation.

The contents of this document have not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution in relation to the investments contained herein (if any). If you are in any doubt about any of the contents of this document, you should obtain independent professional advice.

This document has not been approved by the Securities and Futures Commission in Hong Kong ("SFC"), nor has a copy of this document been registered by the Registrar of Companies in Hong Kong, unless specified otherwise. The investments contained herein may or may not be authorised by the SFC. The investments may not be offered or sold in Hong Kong, by means of any document, other than (i) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) ("SFO") and any rules made under the SFO, or (ii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong)(the "C(WUMP)O") or which do not constitute an offer to the public within the meaning of the C(WUMP)O. No person shall issue or possess for the purposes of issue, whether in Hong Kong or elsewhere, any advertisement, invitation or document relating to the investments, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to investments which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO.

For Residents of Singapore

This material is intended for: Accredited Investors / Institutional Investors in Singapore. Furthermore, this material is provided to addressee only, further distribution of this material is strictly prohibited.

For Residents of the United States of America

In the United States, brokerage services are offered through Deutsche Bank Securities Inc., a broker-dealer and registered investment adviser, which conducts securities activities in the United States. Deutsche Bank Securities Inc. is a member of FINRA, NYSE and SIPC. Banking and lending services are offered through Deutsche Bank Trust Company Americas, member FDIC, and other members of the Deutsche Bank Group. In respect of the United States, see earlier statements made in this document. Deutsche Bank makes no representations or warranties that the information contained herein is appropriate or available for use in countries outside of the United States, or that services discussed in this document are available or appropriate for sale or use in all jurisdictions, or by all counterparties. Unless registered, licensed as otherwise may be permissible in accordance with applicable law, none of Deutsche Bank or its affiliates is offering any services in the United States or that are designed to attract US persons (as such term is defined under Regulation S of the United States Securities Act of 1933, as amended). This United States-specific disclaimer will be governed by and construed in accordance with the laws of the State of Delaware, without regard to any conflicts of law provisions that would mandate the application of the law of another jurisdiction.

For Residents of Germany

This information is advertising. The texts do not meet all legal requirements to ensure the impartiality of investment and investment strategy recommendations or financial analyses. There is no prohibition for the compiler or for the company responsible for the compilation to trade with the respective financial instruments before or after the publication of these documents.

General information on financial instruments is contained in the brochures "Basic Information on Securities and Other Investments", "Basic Information on Financial Derivatives", "Basic Information on Forward Transactions" and the information sheet "Risks in Forward Transactions", which the customer can request from the Bank free of charge.

Past performance or simulated performance is not a reliable indicator of future performance.

For Residents of India

The investments mentioned in this document are not being offered to the Indian public for sale or subscription. This document is not registered and/or approved by the Securities and Exchange Board of India, the Reserve Bank of India, or any other governmental/ regulatory authority in India. This document is not and should not be deemed to be a "prospectus" as defined under the provisions of the Companies Act, 2013 (18 of 2013) and the same shall not be filed with any regulatory authority in India. Pursuant to the Foreign Exchange Management Act, 1999 and the regulations issued there under, any investor resident in India may be required to obtain prior special permission of the Reserve Bank of India before making investments outside of India including any investments mentioned in this document.



For Residents of Italy

This report is distributed in Italy by Deutsche Bank S.p.A., a bank incorporated and registered under Italian law subject to the supervision and control of Banca d'Italia and CONSOB. Its registered office is located at Piazza del Calendario 3 – 20126 Milan (Italy) and is registered with the Chamber of Commerce of Milan, VAT and fiscal code number 001340740156, part of the interbank fund of deposits protection, enrolled in the Bank Register and the head of Deutsche Bank Banking Group, enrolled in the register of the Banking Groups pursuant to Legislative Decree September 1st , 1993 n. 385 and subject to the direction and coordination activity of Deutsche Bank AG, Frankfurt am Main (Germany).

For Residents of Luxembourg

This report is distributed in Luxembourg by Deutsche Bank Luxembourg S.A., a bank incorporated under the laws of the Grand Duchy of Luxembourg in the form of a public limited company (Société Anonyme), subject to the supervision and control of the European Central Bank ("ECB") and Commission de Surveillance du Secteur Financier ("CSSF"). Its registered office is located at 2, Boulevard Konrad Adenauer, 1115 Luxembourg, Grand Duchy of Luxembourg and is registered with Luxembourg Registre de Commerce et des Sociétés ("RCS") under number B 9.164.

For Residents of Spain

Deutsche Bank, Sociedad Anónima Española Unipersonal is a credit institution regulated by the Bank of Spain and the CNMV and registered in their respective Official Registries under the Code 019. Deutsche Bank, Sociedad Anónima Española Unipersonal may only undertake the financial services and banking activities that fall within the scope of its existing licen se. The principal place of business in Spain is located in Paseo de la Castellana number 18, 28046 - Madrid. Registered in the Mercantile Registry of Madrid, Volume 28100, Book 0, Folio 1, Section 8, Sheet M506294, Registration 2. NIF: A08000614. This information has been distributed by Deutsche Bank, Sociedad Anónima Española Unipersonal.

For Residents of Portugal

Deutsche Bank AG, Portugal Branch is a credit institution regulated by the Bank of Portugal and the Portuguese Securities Commission ("CMVM"), registered with numbers 43 and 349, respectively and with commercial registry number 980459079. Deutsche Bank AG, Portugal Branch may only undertake the financial services and banking activities that fall within the scope of its existing license. The registered address is Rua Castilho, 20, 1250-069 Lisbon, Portugal.

For Residents of Austria

This document is distributed by Deutsche Bank AG Vienna Branch, registered in the commercial register of the Vienna Commercial Court under number FN 140266z.Deutsche Bank AG's Vienna branch is also supervised by the Austrian Financial Market Authority (FMA), Otto-Wagner-Platz 5, 1090 Vienna. This document has neither been submitted to nor approved by the aforementioned supervisory authorities.

For Residents of the Netherlands

This document is distributed by Deutsche Bank AG, Amsterdam Branch, with registered address at De entree 195 (1101 HE) in Amsterdam, the Netherlands, and registered in the Netherlands trade register under number 33304583 and in the register within the meaning of Section 1:107 of the Netherlands Financial Supervision Act (Wet op het financieel toezicht). This register can be consulted through www.dnb.nl.

For Residents of France

Deutsche Bank AG is an authorised credit institution, subject to the overall supervision of the European Central Bank and BaFin, the German Federal Financial Supervisory Authority. Its various branches are locally supervised, for certain activities, by the competent banking authorities, such as the Prudential Control and Resolution Authority (Autorité de Controle Prudentiel de Résolution, "ACPR") and the Financial Markets Authority (Autorité des Marchés Financiers, " AMF") in France.

Any reproduction, representation, distribution or redistribution, in whole or in part, of the contents of this document in any medium or by any process whatsoever, as well as any sale, resale, retransmission or making available to third parties in any manner whatsoever, is prohibited. This document may not be reproduced or distributed without our written permission.

© 2025 Deutsche Bank AG. All rights reserved.

056319 030425