EUROPEAN CENTRAL BANK
EUROSYSTEM

Occasional Paper Series

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Understanding the profitability gap between euro area and US global systemically important banks

No 327

Contents

Abstract

This investigation starts with the observation that, over the last decade, profitability rates reported by euro area (EA) banks have remained, on average, persistently below those reported by peer banks in the United States (US). In particular, banks' return on equity (ROE) has fluctuated around 5% in the EA, but around 10% in the US, indicating a profitability gap of around 5 percentage points.[1] However, while comparisons are frequently made between EA and US banks in academic and political debate, they are not perfect benchmarks, nor should this paper be regarded as aiming for a like-for-like comparison.

This paper seeks to identify and analyse the factors behind the profitability gap in a structured manner. We disaggregate the gap between EA and US global systemically important banks (G-SIBs) into the different contributing items in the profit and loss (P&L) statement and then take a deep dive into the drivers for 2021.

Our analysis highlights two main drivers of US G-SIBs' higher profitability. First, the higher income from fees and commissions and trading of US G-SIBs explains the bulk of the difference in ROE. Second, EA G-SIBs are still dealing with legacy non-performing exposures built up during the Global Financial Crisis (GFC) which have driven up the associated impairments and provisions expenses beyond that of US peers.

While we do not aim to provide normative recommendations in this paper, our main conclusion is that the higher profitability of US G-SIBs compared with their EA peers can largely be explained by their different business strategies, which are closely linked to the differing macroeconomic environments and financial systems in which these banks operate. Furthermore, this analysis does not provide a comprehensive picture of US and EA G-SIBs' performance: with the focus on profitability, other important aspects related to risk taking, business model sustainability, and prudential regulation are not included. Regulatory differences across banking systems are not addressed in this investigation.

JEL codes: G15, G21.

Keywords: Bank profitability, global systemically important (G-SIB) banks, return on equity.

[1] This statement holds true both when comparing all significant institutions supervised by the Single Supervisory Mechanism with all US banks insured by the Federal Deposit Insurance Corporation and when comparing G-SIBs between jurisdictions.

Non-technical summary

The aim of this paper is to provide a structured analysis of the factors driving the differences in profitability across EA and US G-SIBs. The paper does not intend to draw conclusions on policies to address these differences.

First of all, this investigation aims to establish some distinctive features of the profitability performance of banks across the Atlantic. We find that the after-tax profitability of EA and US banks has diverged since the GFC, with the latter consistently reporting a stronger financial performance.[2] The ROE metric shows that US banks have experienced higher profitability, with the gap fluctuating at around 5-6 percentage points.

The differing macroeconomic environments and financial systems in which banks operate entail certain caveats that make a like-for-like comparison difficult. As regards the macroeconomic environments, after the GFC, the post-crisis economic recovery was stronger in the United States. This has depicted a macro-financial operating environment that has been more conducive to US banks' profitability when compared with the euro area, where the recovery has taken longer. As regards the structure of the financial system, US banks operate in a more market-oriented financial system, in which non-bank financial intermediation and capital markets-based finance shape banking business strategies. Furthermore, banking systems across the two jurisdictions present structural differences that should be borne in mind. Looking at the banking systems as a whole, we observe that banking sector concentration is greater in the United States, which may allow the biggest banks to exert more pricing power. Larger US banks also seem to be more geographically diversified than the largest EA banks.

These differences suggest that US institutions are not necessarily a good benchmark for EA banks, as their operating environments shape different business models. Notwithstanding this caveat, comparisons of EA banks' with US institutions are frequent not only in academic debate but also among policymakers and in the media. In this context, this paper offers a fact-finding exercise that tries to disentangle and deep dive into the different P&L items behind the profitability gap for G-SIBs. Although their business models are not homogeneous, by focusing on G-SIBs we aim to have a sample whose relevance is comparable. Therefore, this paper should not be regarded as a like-for-like comparison, nor should the drivers of US banks' better financial performance be taken as a "recipe for success" for EA institutions, not least because profitability is only one element of overall performance, which also involves other aspects such as risk taking, business model sustainability, and prudential regulation.

In this regard, our analysis focuses on G-SIBs, starting with the observation that EA G-SIBs are universal banks that are more oriented towards credit intermediation. In comparison, the US G-SIBs sample also contains investment and custodian banks

[2] For the purposes of this paper, the "euro area" does not include Croatia.

and shows a higher proportion of investment banking and trading activities overall. We take a cross-sectional perspective and break down the different items in the P&L statement that help explain the profitability gap, focusing on 2021. Due to the construction of this metric, areas where US G-SIBs are more profitable make a positive contribution to the gap, while negative contributions relate to items that are more conducive to banks' profits in the euro area.

First, we observe that non-interest income is the main driver of the excess profitability of US G-SIBs compared with EA G-SIBs. Investment banking, trading and activities related to mortgage-backed securities (MBS) are the main segments contributing to this difference. US G-SIBs dominate global investment banking activities, as they seem to be able to leverage the expertise developed domestically to also outcompete EA G-SIBs in global capital markets. As regards trading activities, the US peers' more substantial investment in technological infrastructure allows them to undercut marginal costs and manage large transaction volumes, while offering competitive prices. This enables them to obtain a much larger market share in trading activities compared with EA banks. Last but not least, the role of government-sponsored enterprises (GSEs) is an important way for banks to securitise and even deconsolidate certain types of mortgages, while collecting mortgage servicing fees. The securitisation market is less developed in the European Union, where it is mainly focused on funding and less on the deconsolidation of exposures.

Second, net interest income helps partially reduce the profitability gap, as its contribution to bank profitability is higher for EA banks. On the one hand, US G-SIBs reap higher rates from their lending activities, mostly driven by the fact that the composition of their loan books is tilted towards higher-yielding exposures. In addition, US G-SIBs started operating earlier in a higher interest rate environment, as favourable economic dynamics resulted in policy rate hikes between 2016 and 2020. Debt securities are also important income-yielding assets for US peers, whose debt portfolios are three times the size of those of EA banks, apparently enabling US banks to benefit from higher rates and higher net trading income. Looking at interest-bearing liabilities, we observe that US G-SIBs are more reliant on deposits, a relatively cheap source of funding. This funding-mix tilted towards deposits more than compensates for the higher interest rate environment and has therefore allowed US banks to benefit from lower interest expenses, widening the profitability gap. However, while their net interest margins are smaller, materially larger loan portfolios allow EA G-SIBs to achieve profitability from net interest income that more than compensates the aforementioned advantages of the US G-SIBs. Debt funding makes up a similar proportion of total liabilities and equity for both samples, while our findings suggest the associated cost is slightly higher for US G-SIBs.

Third, expenses associated with impairments and provisions are also an important contributor to the profitability gap, as they are higher for EA G-SIBs. While the non-performing loans (NPLs) of EA banks have been significantly reduced, the banks are still dealing with the burden of legacy NPLs built up during the GFC and the subsequent sovereign debt crisis. In this regard, the better quality of assets in US G-SIBs' portfolios has resulted in structurally lower cost of risk levels.

Fourth, other operating expenses have been significantly higher for US G-SIBs, largely due to their propensity for higher staff remuneration and more sizeable IT investment budgets. In particular, while both EA and US G-SIBs have comparable balance sheet sizes, which aggregate to around 12trn EUR each, the latter have spent twice as much on both staff and IT. Consequently, this item makes a negative contribution to the gap, indicating a greater contribution to profitability in the case of the EA banks. However, the accounting effect of these items should not be looked at in isolation, as they are crucial aspects that might ultimately allow US G-SIBs to build up competitive advantages and could therefore help explain their superior financial performance in areas such as investment banking and trading. Regarding taxes, US G-SIBs have higher tax-related expenses in absolute terms, but this is due to their larger tax base (i.e. higher pre-tax profits), while their effective tax rate tends to be below that of EA G-SIBs. Looking at the contribution of tax payments to profitability, our analysis suggests that tax does not appear to be a structural driver explaining the profitability gap.

1 Introduction

Over the last decade, the profitability rates of euro area (EA) and US banks have differed consistently, with the latter regularly achieving a stronger financial performance. Since the aftermath of the Global Financial Crisis (GFC), credit institutions in the EA have reported profitability levels, measured using (after-tax) return-on-equity (ROE), that oscillate around 5%, while the figure has fluctuated at around 10% for US banks, leading to a structural profitability gap of around 5-6 percentage points over the period 2012-2021 (**Chart 1, panel a**). This profitability gap exists not only for the aggregate banking system, but also for the case of G-SIBs, in particular.

The weaker financial performance of EA banks compared with their US counterparts is also reflected in lower stock market valuations. Market valuations reflect the relative underperformance of EA banks and may suggest that investors expect it to persist, as the price to tangible book value ratio of the US G-SIBs was twice as high on average over the period 2014-21. Furthermore, the price to tangible book value ratio remains below one for EA banks, showing that the market value of the banks' equity trades at a significant discount compared with the book value of their equity (**Chart 2, panel a**). In addition, modest profitability seems to be quite a long-lasting and intrinsic feature of the European banking system. In particular, between 2015 and 2021, ROE remained, on average, well below the cost of equity for EA banks for several years, meaning that the profits generated were lower than investors' expected compensation for holding bank equity (**Chart 2, panel b**).

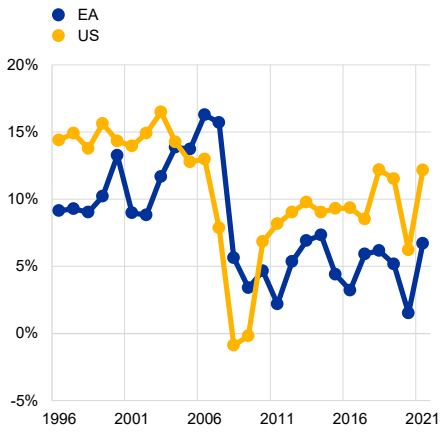
The differing macroeconomic dynamics across jurisdictions shed some light on the possible underlying reasons for the profitability performance gap: after the 2008-09 crisis, the US economy rebounded strongly, and banks returned to healthier profitability levels. In contrast, in the euro area, the GFC was followed by a sovereign debt crisis, leading to a longer-lasting, double-dip recession and a comparatively muted recovery (**Chart 1, panel b**). Furthermore, during the sovereign debt crisis, the strong negative feedback loop between credit institutions and public debt securities generated financial distress, which weighed negatively on banks. In particular, the deterioration in the sovereign credit outlook affected banks both directly through their exposures to sovereign bonds, and indirectly through higher funding costs. Since then, cyclical macroeconomic factors have been less conducive to profit generation for banks in the EA, which helps to explain why their performance has lagged behind that of their US peers in this period. In particular, the ECB (2015) has pointed to cyclical factors such as larger loan loss provisions (over total loans) and lower gross domestic product (GDP) and credit growth (as a percentage of GDP) to help explain the profitability gap between EA and US credit institutions in the aftermath of the crisis.

Chart 1

EA and US banks' profitability and macroeconomic evolution

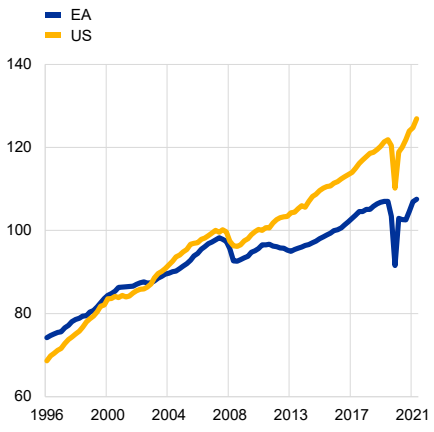
a) EA and US banks' return on equity (ROE)

(1996-2021; %)



b) Euro area and US real gross domestic product (GDP)

(1996-2021; index, 2007 = 100)



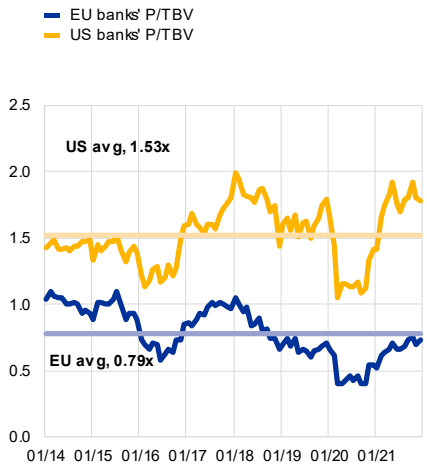
Sources: Panel a): Federal Deposit Insurance Corporation (FDIC), Federal Reserve Economic Data (FRED) and ECB supervisory reporting. Panel b): European Commission (AMECO database) and Federal Reserve of St. Louis.
Notes: Panel a): the EA data includes a weighted average for the set of institutions directly supervised by ECB, whereas, for comparability, US data refers to the largest institutions insured by the FDIC (i.e. those with equal or above 10bn USD in total assets). Both groups are a representative sample of their respective banking systems, as they include the largest institutions which jointly own more than 85% of total assets in their banking systems. Panel b): the EA sample contains EA19 countries. Real gross domestic product is computed using chain-linked volumes (calendar and seasonally adjusted).

Chart 2

EA and US banks' market valuations and performance

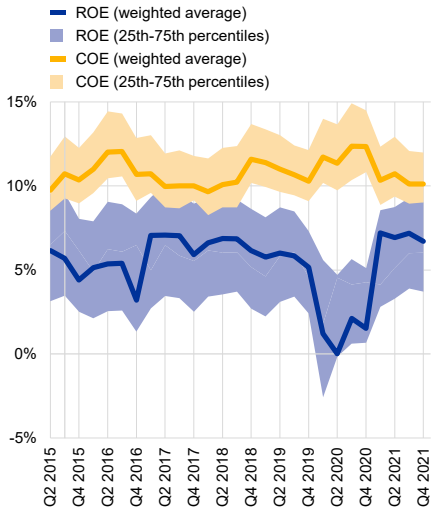
a) EA and US banks' P/TBV ratios

(Jan. 2014 – Dec. 2021; multiplier)



b) EA banks' ROE vs cost of equity

(2015Q2 – 2021Q4; %)



Sources: Panel a): Bloomberg Finance L.P. and Refinitiv via ECB Statistical Data Warehouse (SDW). Panel b): Sources: ECB supervisory reporting, Altavilla et al. (2021), and ECB calculations.
Notes: Panel a): The EA sample is built with EUROSTOXX Banks, while the US sample is built with Dow Jones US Banks. Panel b) The sample includes the significant institutions under direct supervision of the Single Supervisory Mechanism (SSM). The number of banks per reference period changes due to amendments to the list of significant institutions following assessment by ECB.

From a supervisory perspective, low bank profitability is extremely relevant, as it is a key part of assessing banks' risk-taking behaviour and guiding their capitalisation needs. First, persistently low profitability could incentivise excessive risk taking on the part of banks, which would increase risks to the financial sector. Second, low profitability hampers the ability of banks to build up capital buffers, either via lower internal capital generation or via higher funding costs, which would ultimately impair their shock-absorption capacity.

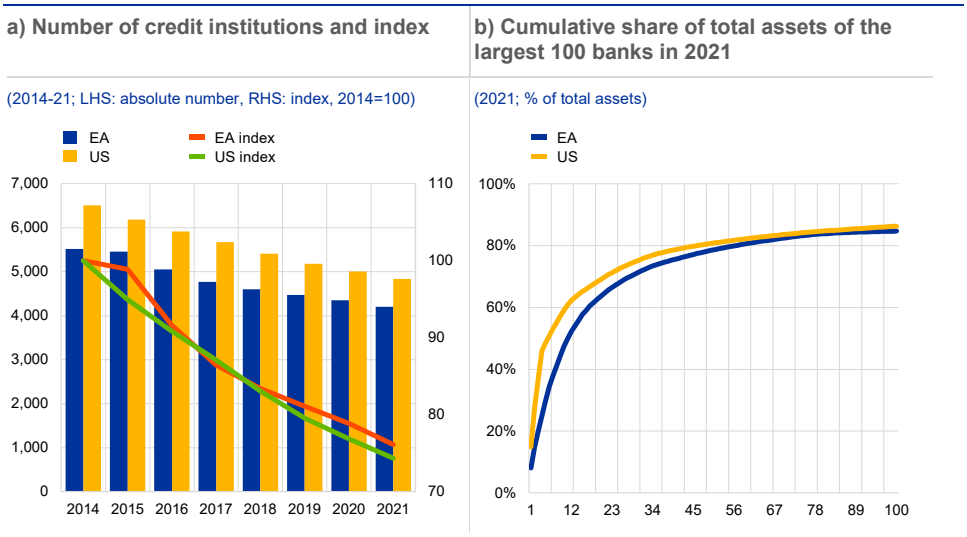
This paper focuses on understanding the factors behind the lower profitability of EA G-SIBs compared with that of US G-SIBs and discussing the P&L items that might help to explain this profitability gap. The rest of the paper is organised as follows. Section 2 identifies structural differences in the banking systems of the two jurisdictions (the euro area and the United States), while from Section 3 onwards the analyses are focused on EA and US globally systemically important banks (G-SIBs). In particular, Section 3 offers a high-level overview of the G-SIBs' aggregated financial statements to frame how business strategies differ between jurisdictions. Section 4 separates out the profit and loss (P&L) items driving the long-standing after-tax profitability gap, measured via ROE, between EA and US G-SIBs. This is followed by a deep dive on the underlying reasons for the gap observed in 2021. Lastly, Section 5 provides some concluding remarks.

2 Structural differences between the EA and US banking systems

The banking systems in these two jurisdictions present key structural differences. While the number of credit institutions is comparable between the jurisdictions (Chart 3, panel a), the market concentration among the largest players is higher in the United States. Over the last decade, both jurisdictions have undergone a steady consolidation process, although the pace of the decline in the number of banks has slowed down since 2016-17 in the EA (see, for example, ECB (2017)). When looking at the top-tier banks, the US banking system is more concentrated, as the share of total assets of these institutions is larger than that of their EA peers. In particular, while the top eight banks in the EA hold an accumulated 41.3% of total assets in the banking system, the figure is 55.2% in the United States (**Chart 3, panel b**).

Chart 3

Structural features of EA and US banking systems



Sources: Panel a): ECB list of Monetary Financial Institutions (MFI) and Federal Deposit Insurance Corporation (FDIC). Panel b): ECB supervisory reporting, Standard and Poor's (S&P) Capital IQ and ECB calculations.

The two banking systems differ substantially in terms of size, with banks playing a greater role in financial intermediation in Europe. The degree of banking penetration differs between jurisdictions, with domestic credit to the private sector granted by banks representing around circa 55% of GDP in the United States, significantly below the figure of more than 90% for the euro area.[3] Likewise, total assets owned by banks as a percentage of GDP is around two and a half times

[3] See The World Bank data (2020).

greater in the euro area (244% vs 100%).[4] The degree of banking penetration or financial inclusion also differs between jurisdictions, with the unbanked proportion of the population being twice as high in United States compared with the euro area (see Ampudia and Ehrmann, 2017).[5] In particular, low-income, unemployed, and uneducated households are most likely to be unbanked, and markedly more so in the United States than in the euro area.

Overall, the difference in the banking systems in terms of size can be largely attributed to three main factors (see also ECB (2013)): (i) the more prominent role of market-based finance via non-bank financial intermediation in the US, (ii) the greater role of government-sponsored enterprises (GSEs) in the US, and (iii) differences in determining total assets according to the respective accounting frameworks (US Generally Accepted Accounting Principles (GAAP) and European International Financial Reporting Standards (IFRS)). As regards (i), the EA economy is more reliant on bank financing, while capital market-based intermediation is more widespread in the US, where corporates raise funds primarily via the securities markets. Among other factors, this seems to reflect the more developed capital markets in the US. In the EA, the less integrated capital markets, combined with a higher number of small and medium-sized enterprises (which are often excluded from bond markets due to their smaller size), may be hindering market-based finance. In this respect, further developments in the EU initiative on capital markets union would be key in further supporting EA corporates in accessing the securities markets.

As regards (ii), the existence of GSEs that guarantee the securitisations of certain types of assets allows US banks to engage in originate-to-distribute lending practices, resulting in a sizeable number of loans being moved to off-balance sheet exposures. This dynamic reduces the size of the balance sheets of US banks, making them harder to compare with those of their EA peers. As regards (iii), the treatment of derivatives positions under the US GAAP allows US banks to only report the net value of all derivative positions under a single master agreement with the same counterparty, which is also the case for repurchase and reverse repurchase agreements. This aspect of GAAP accounting reduces the US banks' total assets compared with the gross derivatives reported by their EA peers under IFRS.

The geographical footprint varies considerably between jurisdictions, with US banks having a larger global presence. Since 2000, the EA credit institutions have been reducing their cross-border assets, a trend that exacerbated after the GFC. This has caused them to lose ground against the US banks, which took the opposing avenue. The latter have also strengthened their presence in EA capital markets and, in particular, in the most profitable segments (i.e. mergers and acquisitions and

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4 Eurostat and ECB consolidated banking data show that the total assets of credit institutions headquartered in the euro area amounted to around 30trn EUR as of 2021, while nominal GDP stood at 12.3trn EUR in the same year. For the US, FDIC data shows that the assets of insured credit institutions amounted to around 23.6trn EUR, very close to US GDP (23.3trn according to OECD data).

5 Unbanked population refers to households with no access to saving and borrowing instruments via formal financial institutions.

equity capital markets), which allowed them to obtain additional revenues from abroad, as documented by the ECB (2021a).

3 EA and US G-SIBs' financial statements

Notwithstanding the structural differences between EA and US banking systems (Section 2), the following sections focus on G-SIBs headquartered in both jurisdictions. In particular, the aim of Section 3 is to understand the differences in G-SIBs' balance sheets (Section 3.1) and net income composition (Section 3.2) and how these ultimately explain disparities in profitability, which will be discussed later, throughout Section 4. Section 4 take and in-depth look at the contribution of the different P&L items to the profitability gap. These analyses are performed on G-SIBs to ensure greater comparability across samples.[6] However, it should be acknowledged that US G-SIBs are not necessarily the most relevant benchmark for EA banks, as their business models differ substantially. In particular, all the EA G-SIBs are universal banks, while the US sample contains four universal banks, two investment banks[7] and two custodian banks[8], the latter being much smaller in size than the other six institutions.

3.1 Balance sheet composition

The composition of banks' balance sheets varies widely between jurisdictions, reflecting important differences between US and EA banks' business strategies. In this section we compare the composition of the balance sheets of the banks included in our sample (EA and US G-SIBs). Throughout this section, an important caveat applies: differences in the balance sheets should be analysed in the context of (i) different accounting standards (in particular, derivatives netting in the United States) and (ii) the different functioning of the economies (e.g. more developed capital markets in the United States, plus the role of GSEs in this jurisdiction, which is unparalleled in the euro area).

The distribution across asset types shows that traditional lending activities play a more prominent role among EA banks, while US banks are more focused on investment banking (IB) and trading activities. While holdings of cash and cash equivalents are somewhat comparable between jurisdictions (around 15%), loans and advances (L&As) represent a greater share of total assets for EA G-SIBs, reflecting their greater focus on credit intermediation. This difference also reveals the divergent business strategies. On the one hand, while US banks have traditionally functioned more as originators and distributors of loans, in the absence of GSEs, EA banks have kept the bulk of their originated loans on their balance sheets. In particular, in 2021, the share of total L&As as a percentage of total assets

6 In the rest of the paper, the analyses cover the samples composed of all EA G-SIBs (namely, Banco Santander, BNP Paribas, Deutsche Bank, BPCE Group, Group Crédit Agricole, ING Group, Société Générale and UniCredit) and all US G-SIBs (namely Bank of America Corporation, Bank of New York Mellon Corporation, Citigroup, Goldman Sachs Group, JPMorgan Chase & Co, Morgan Stanley, State Street Corporation and Wells Fargo & Company). Specific analyses may deviate from this sample due to data availability (in such cases, the different sample is explicitly mentioned).

7 Goldman Sachs Group and Morgan Stanley.

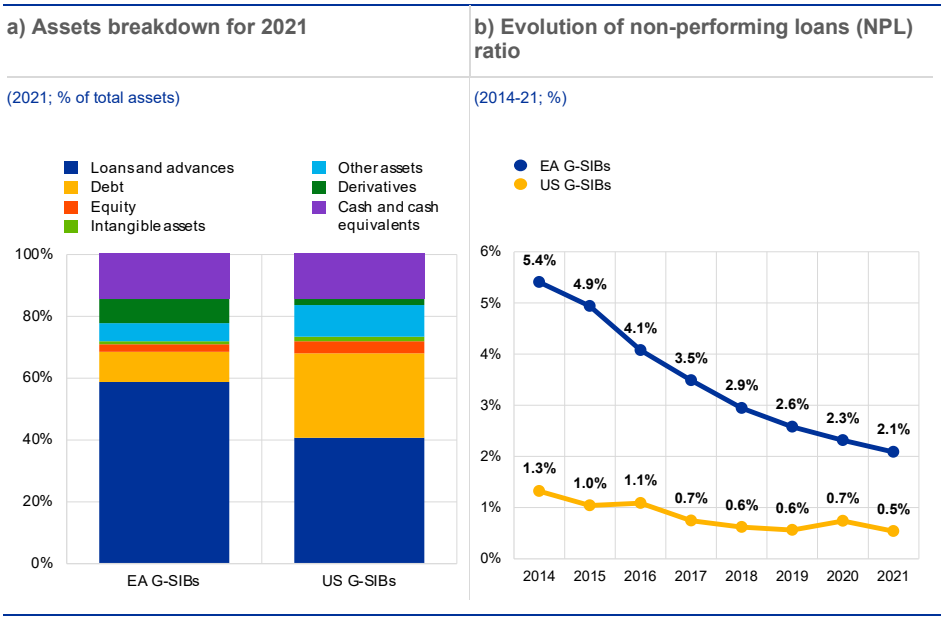
8 Bank of New York Mellon Corporation and State Street Corporation.

stood at 58.4% for G-SIBs under ECB Banking Supervision, substantially higher than the figure of 40.5% for the US peers. On the other hand, holdings of debt and equity securities play a more prominent role for US banks, which are more active in IB and trading. The gap is particularly significant in terms of the relative size of the debt portfolios (10.1% vs 27.6%). Lastly, the much smaller proportion of derivatives for US banks (2% vs 8%) is largely due to the derivatives netting under US GAAP (**Chart 4, panel a**).

Asset quality also differs between jurisdictions. In recent years, EA G-SIBs have been carrying the burden of legacy non-performing loans (NPL) built up during the GFC and the subsequent sovereign debt crisis. While US banks also underwent an increase in their non-performing exposures during the GFC, this was rather modest when compared with the EA G-SIBs. Although the gap between NPL ratios of the jurisdictions have been narrowing in the last few years, EA G-SIBs still have higher NPL ratios in their balance sheets due to their much higher starting point after the GFC (**Chart 4, panel b**).

Chart 4

Breakdown of total assets and asset quality evolution for EA and US G-SIBs



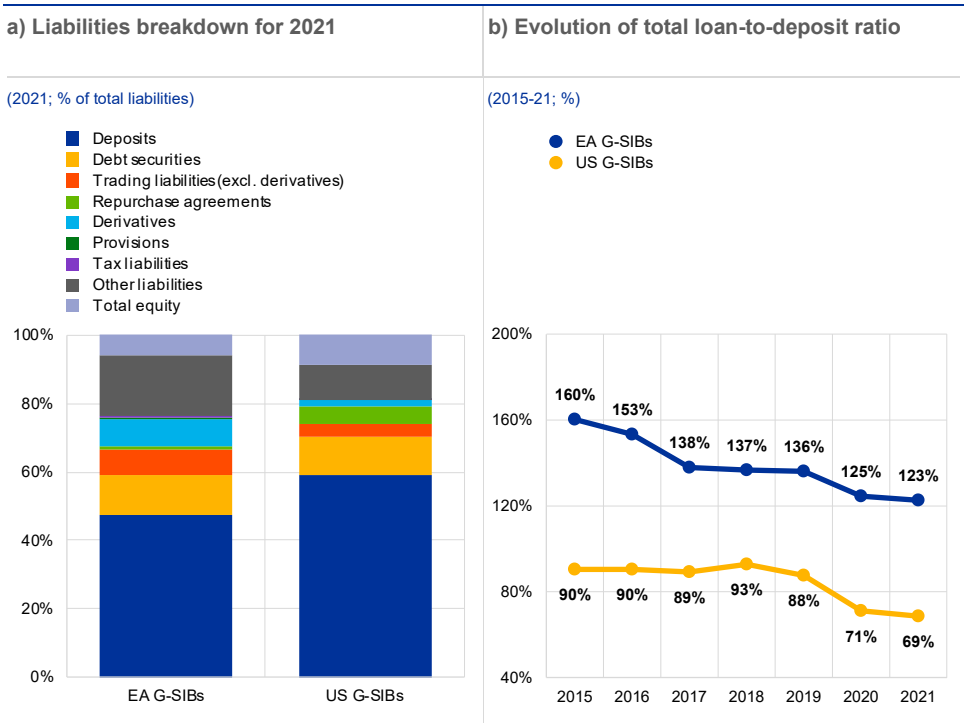
Sources: ECB supervisory reporting and Bureau van Dijk's Orbis database.
Notes: The sample comprises EA and US G-SIBs. Other assets are mainly a residual category without much detail available in the databases used. The US sample for the NPL ratio excludes Morgan Stanley (2020-21) and State Street Corporation (2014-21) due to missing data.

With regard to the funding structure, the proportion of both total deposits and equity seems to be higher for US banks. Deposits as a proportion of total liabilities are around 60% for US G-SIBs, but more than ten percentage points lower for EA G-SIBs (47.6%). As regards equity, leverage appears to be lower for US banks (**Chart 5, panel a**), particularly when measured via the accounting-based leverage ratio (approximated as equity over total assets), which appears to be higher for US G-

SIBs (8.54% vs 5.84%).[9] This difference may be affected by the aforementioned accounting differences, which allow banks using US GAAP to calculate lower total assets than they would be using IFRS. However, even when looking at proxied IFRS-compliant figures for US banks, the leverage ratio for US G-SIBs still appears to be historically higher than for their EA peers.[10] While the share of deposits is lower for EA G-SIBs, these banks are more dependent on other liabilities, including government and central bank deposits. These differences in balance sheet structure have resulted in aggregate total loan-to-deposit ratios below 100% for US G-SIBs (69% in 2021), which are using deposits to fund businesses other than lending activities. In contrast, EA G-SIBs have a higher aggregate total loan-to-deposit ratio (123% in 2021) (**Chart 5, panel b**).

Chart 5

Breakdown of total liabilities and evolution of total loan-to-deposit ratio for EA and US G-SIBs



Sources: ECB supervisory reporting and Bureau van Dijk's Orbis database.
Notes: The sample comprises EA and US G-SIBs. For Chart 5, panel a), other liabilities are mostly a residual category without much detail available in the database used for US G-SIBs, which includes trading liabilities (exc. derivatives) and other liabilities and provisions. In chart 5, panel b), for the numerator of the ratio, all L&As net of impairments are considered, while total deposits are used for the denominator.

9 While the bulk of the subordinated instruments issued by banks take the form of debt in the case of EA G-SIBs, they take the form of preferred shares for US G-SIBs, exacerbating the gap in the leverage ratio in favour of the latter. However, when excluding preferred shares, equity over total assets amounts to 7.77% for US G-SIBs, still well above the figure for EA G-SIBs.

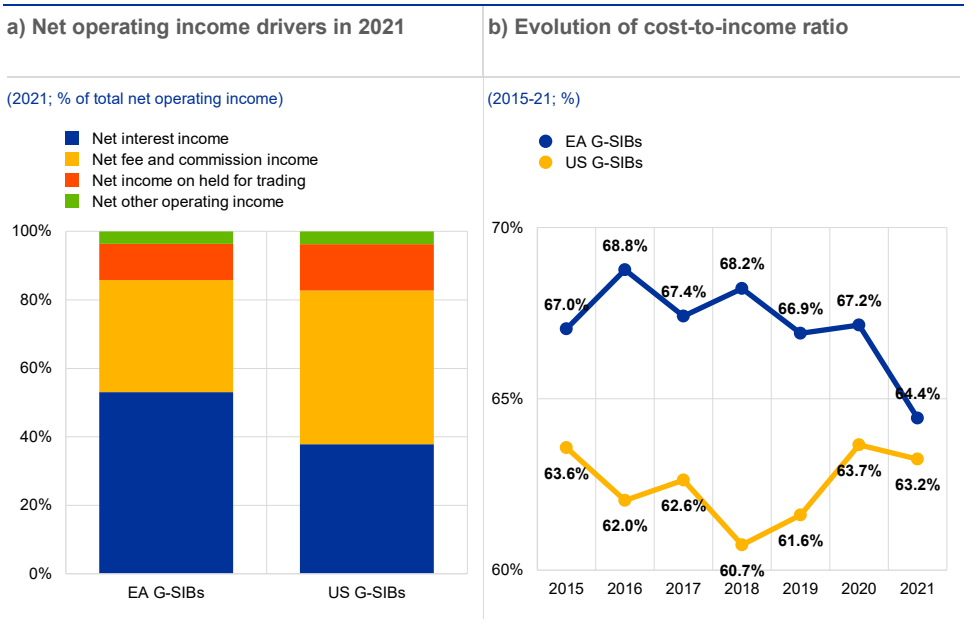
10 As part of the Global Capital Index publication, the Federal Deposit Insurance Corporation (FDIC) provides both GAAP-compliant and IFRS-compliant measures of total assets for US G-SIBs up to 2017Q4. In 2017, equity represented around 10.5% of total assets under GAAP. While the ratio was around 150 basis points lower under IFRS (9%), it still remained well above the corresponding figure for EA G-SIBs in 2017 (6.3%).

3.2 Net income composition

Interest income has historically been the main source of revenue for EA banks, while their US counterparts have traditionally relied more on fee and commission income, as well as on profits stemming from trading activities. In particular, the total net operating income of G-SIBs under ECB Banking Supervision was largely driven by net interest income (53.08%) in 2021, while the comparable figure was lower for US peers (37.85%). Conversely, net fee and commission income and net trading income made up a larger share of total net operating income for US G-SIBs (**Chart 6, panel a**), the gap being around 12 percentage points (32.73% vs 44.87%). The composition of income supports the much more favourable relationship between income and operating expenses for the US G-SIBs. Although US banks have higher staff expenses and investments in technological innovation, among other expenses, their higher income more than offsets their higher costs, as demonstrated by their lower cost-to-income ratio (**Chart 6, panel b**).

Chart 6

Net operating income drivers and cost efficiency for EA and US G-SIBs



Sources: ECB supervisory reporting and Bureau van Dijk's Orbis database.
Notes: The sample comprises EA and US G-SIBs. Net other operating income includes net insurance income, net gains on real estate, net gains on securities at fair value (through P&L and other comprehensive income), and other operating income.

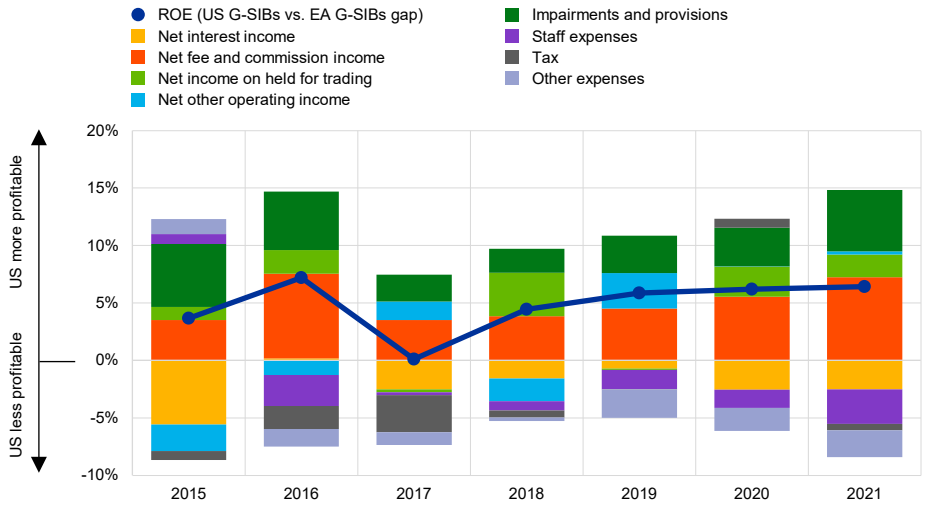
4 Determining the drivers behind the EA vs US G-SIBs profitability gap

The aggregate after-tax profitability gap between EA and US G-SIBs, measured via return on equity (ROE), has persisted since the post-GFC period. Since 2015, the profitability gap in favour of US banks has consistently remained at around 5-6 percentage points of ROE, with the sole exception being 2017, when the upcoming reduction in US federal corporate income tax led US G-SIBs to book substantial tax-related expenses in view of the significant derecognition of deferred tax assets (see also Section 4.3.2). While the contribution of certain P&L items to the ROE gap is quite volatile (e.g. tax and net other operating income), we identify three drivers that make structural contributions to this profitability gap: (i) net fee and commission income (NFCI), (ii) net trading income (NTI), and (iii) impairments and provisions. Interestingly enough, net interest income (NII) makes a negative contribution to the gap, representing a larger proportion of the profitability of EA G-SIBs compared with their US peers despite the higher interest rates prevailing in the US over the period under review (see also Section 4.1.1). Moreover, staff and other expenses have also helped to reduce the gap, particularly between 2019 and 2021, demonstrating that US G-SIBs have presented higher expenses deriving from these P&L items than EA G-SIBs (**Chart 7**).

Chart 7

Evolution of the ROE gap between EA and US G-SIBs

(2015-21; percentage points)



Sources: ECB supervisory reporting and Bureau van Dijk's Orbis database.
Notes: The sample comprises EA and US G-SIBs. Net other operating income includes net insurance income, net gains on real estate, net gains on securities at fair value (through P&L and other comprehensive income (OCI)) and other operating income. For 2019-21, the bulk of the difference in "other expenses" is driven by other (non-administrative) operating expenses which includes IT-related expenses.

This chapter seeks to provide deeper insights into the major drivers behind the EA and US G-SIBs profitability gap in 2021. In 2021, the combined net profit of all EA G-SIBs was approximately 50bn EUR, representing around 7.2% of total

equity. For US G-SIBs, net profit was around 100bn EUR higher (150bn EUR in total), representing 13.6% of total equity. Therefore, the gap between the ROE of US and EA G-SIBs was 6.4 percentage points that year. This chapter deep dives into the main drivers of this profitability gap. The first sub-section covers the main drivers within net operating income namely net interest income (Section 4.1.1), net fee and commission income (Section 4.1.2) and net trading income (Section 4.1.3). The next part tackles the topic of impairments and provisions (Section 4.2), while the last subsection (Section 4.3) covers other operating income and expenses (including staff expenses, IT investment and tax-related net expenses).

4.1 Net operating income

4.1.1 Net interest income

While the contribution of net interest income (NII) to the profitability gap has been rather volatile in the last few years, it has recently been making a greater contribution to profitability for EA G-SIBs. Focusing on 2021, we observe that NII has made a negative contribution to the gap in ROE between US and EA G-SIBs of around -2.5 percentage points. This negative contribution shows that this item has been more conducive to profitability for EA G-SIBs (**Chart 7**). In the following sections, we will examine the main drivers behind this P&L item, namely interest income (Section 4.1.1.1) and interest expenses (Section 4.1.1.2).

While EA G-SIBs have collected more net income stemming from L&As, they have also experienced lower debt income and higher funding expenses. On the income side, our analyses suggest that US G-SIBs have benefitted from higher rates applied to their lending activities, driven both by their more favourable interest rate environments and the composition of their loan books, tilted towards higher margin segments (e.g. consumer credit and credit card loans). However, the larger size of the L&A portfolios of EA G-SIBs seems to have offset the interest margin effect, which explains the greater contribution of their NII to profitability. Furthermore, much larger debt securities asset portfolios, mainly composed of government debt and GSE-backed securities, have allowed US G-SIBs to generate interest income beyond lending activities to an extent not seen in the case of EA banks (see **Chart 11** in Section 4.1.1.1). On the expenses side, funding costs have been rather advantageous for US G-SIBs. In particular, US banks seem to rely more heavily on deposits, a less expensive source of funding, and benefit from more advantageous rates than EA G-SIBs. Regarding wholesale funding, while spreads seem historically to have been lower on average and less volatile for US G-SIBs, monetary policy seems to have eased access to wholesale funding for EA G-SIBs.

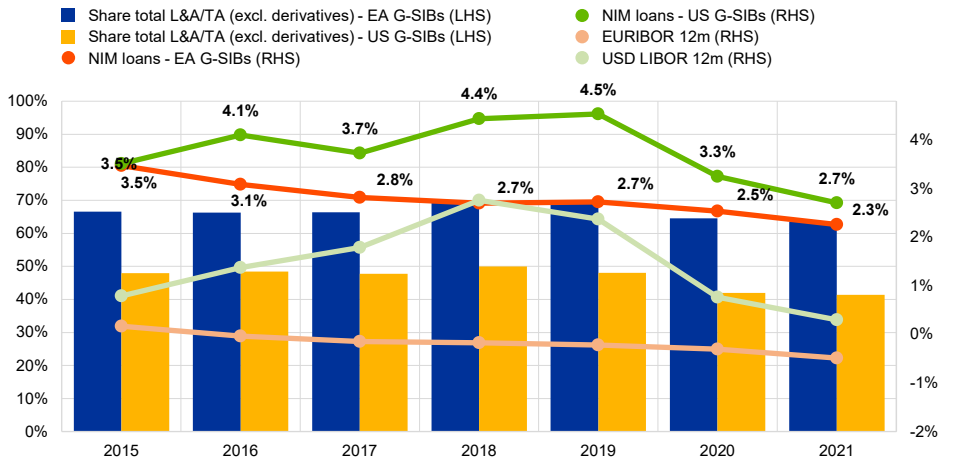
4.1.1.1 Interest-yielding assets

EA G-SIBs are historically more lending-driven than their US peers, which benefit from the more developed financial markets and are more focused on investment banking (IB) and trading activities. Since the inception of the Single Supervisory Mechanism (SSM), the share of total L&A as a percentage of total assets excluding derivatives has been, on average, almost 20 percentage points higher for EA G-SIBs when compared with US peers (**Chart 8**).[11] Through securitisation, US G-SIBs are able to remove certain exposures, such as mortgages, from their balance sheets and forgo the associated credit risk while only retaining a minor risk exposure. In the process, banks collect fee and commission revenues (e.g. loan origination fees) (see also Section 4.1.2). Therefore, on-balance sheet interest-yielding loan exposures within EA G-SIBs' assets are not fully mirrored in the United States. Furthermore, much more developed capital markets enable US corporates to find alternative funding, thereby reducing the need for bank lending in the economy and increasing the volume of debt instruments issued by corporates. The larger role played by capital markets-based intermediation in non-financial corporates' (NFCs) funding might also be explained by a higher number of larger companies, since small and medium-sized enterprises, more frequent in the EA, are more likely to be excluded from the bond markets (see also ECB, 2013).

Chart 8

Share of L&As in banks' balance sheets and net interest margin (NIM) on L&As versus benchmark rates

(2014 - 21; LHS: % of total assets; RHS: %)



Sources: ECB supervisory reporting, ECB SDW, Moody's Analytics BankFocus database, ICE Benchmark Administration Limited (IBA), and ECB calculations.
Notes: The sample comprises EA and US G-SIBs. The net interest margin (NIM) is estimated as net interest income on total loans divided by the outstanding amount of total loans. The decrease in the share of loans in the overall balance sheet between 2019 and 2020 (more marked for EA G-SIBs) is mainly due to an increase in central bank cash balances.

Despite loans and advances being less prominent for US banks, they tend to earn higher margins on the amounts lent, which may be due to their different

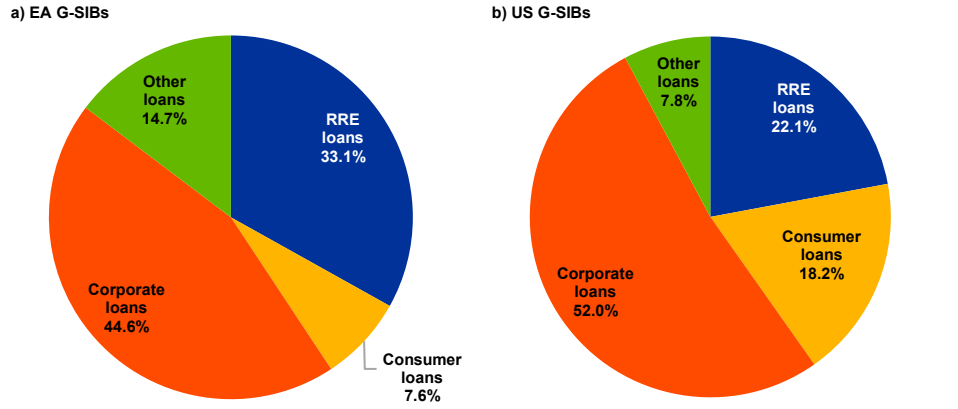
[11] Derivatives have been excluded to ensure the comparability of the figures under different accounting standards. US institutions tend to report net derivatives positions in their published financial statements under US GAAP. Due to the exclusion of derivatives, the figures differ from those provided in Chart 4 (panel a).

loan book compositions, as well as other factors.[12] While loans play a more prominent role on the balance sheets of EA G-SIBs, compared with their US peers, the net interest margin earned on lending activities appear to be significantly higher for US banks, which may be due to the securitisation of mortgages allowed by GSEs in the US, which reduces the share of this comparatively lower margin segment in US G-SIBs' L&A portfolios. Thus, the loan book composition of US G-SIBs places more emphasis on segments associated with higher margins. Looking at the 2021 figures, we can see that EA G-SIBs are more reliant on residential real estate (RRE) (33.1% vs 22.1% in United States), while for US G-SIBs both corporate loans (52.0% vs 44.6% in the EA) and consumer loans (18.2% vs 7.6% in EA) predominate (**Chart 9**). Furthermore, when focusing on the net interest margins associated with specific segments within household loans (see **Chart 10**), we observe that US G-SIBs are also able to reap larger margins (NIM) than their EA peers, particularly on consumer loans (9.4% vs 5.5% in the EA) and RRE loans (3.5% vs 1.8% in the EA). The reasons for this gap may include the differences in interest rate environments, and the pricing power of the banks.

Chart 9

Loan share composition for EA and US G-SIBs in 2021

(2021; % of total L&As)



Sources: ECB supervisory reporting, Moody's Analytics BankFocus database and ECB calculations.
Notes: The sample comprises EA and US G-SIBs. The residential real estate (RRE) classification is based on non-trading L&As (lending for house purchases for EA and mortgage loans for United States). Corporate loans include both loans to NFCs and to other financial corporations (OFCs). Other loans are estimated as a residual category and mainly composed L&As to central banks, general governments and credit institutions. Loans are plotted gross of reserves.

Apart from their loan book composition, US banks have also benefited from a more favourable macroeconomic operating environment in recent years, with higher interest rates supporting their margins. The macroeconomic operating environment differed markedly between jurisdictions, as cyclical factors led to the implementation of expansionary monetary policy in the euro area, exerting sustained downward pressure on interest rates and resulting in a negative 12-month EURIBOR. In comparison, stronger economic growth allowed the USD 12-month LIBOR to follow a different path, peaking at almost 2.8% in 2017 (see **Chart 8**). The evolution of NIM on loans has mirrored the benchmark interest rates in the financial markets, closely related to policy rates (**Chart 8**). In this regard, between 2015 and

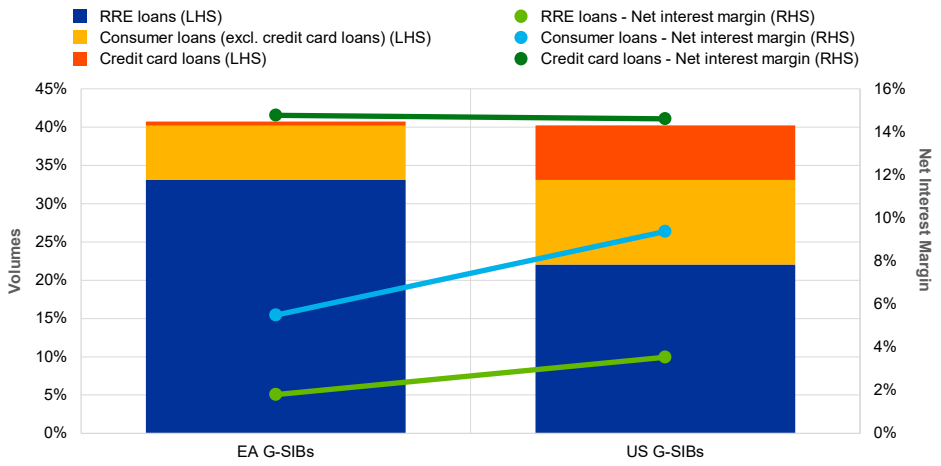
[12] Margins are measured as net interest income on L&As over total L&As.

2021, higher rates in the United States seem to have helped overseas banks to enjoy bigger margins than those accrued by EA G-SIBs, while the latter experienced a decline in margins that was constant over the period under review (2014-21).[13] Shortly before the pandemic, in 2019, the gap on NIM on loans was 1.8 percentage points (4.5% vs 2.7% in the EA). However, in 2020-21, rates fell back to close to zero in the United States, thereby closing the gap in margins (2.7% vs 2.3% in the EA) (see **Chart 8**). More information about the role of macroeconomic and interest rate conditions can be found in Box 1 below.

Chart 10

Decomposition of total household loans for EA and US G-SIBs in 2021

(2021; LHS: % of total L&As, RHS: %)



Sources: ECB supervisory reporting and Moody's Analytics BankFocus database, the Federal Reserve System's terms of credit data, and ECB calculations.
Notes: The sample comprises EA and US G-SIBs, with the exception of the margin metrics for the United States, which use US-level data from the Federal Reserve. For the EA sample, NIMs are estimated as total NII on the loan sub-category divided by the outstanding amount of loans in the sub-category considered. For EA banks, data on credit card loans also include debit and other cards. For US banks, the NIM derives from data on actual interest rates prices charged on outstanding credit. In particular, the data refer to prices for "personal loans" and "credit card plans" as reported by commercial banks in the Fed's Consumer Credit dataset.

Last but not least, a greater concentration among US G-SIBs may also enable banks to exert more pricing power than their EA peers. The share of total assets held by the bigger banks is greater for the United States, suggesting a higher degree of banking concentration compared with the EA banks (**Chart 3, panel b**). The evidence points towards significant overcapacities in the EA banking market compared to the US, which manifest in two phenomena: an excess of branches and an excess in the number of competitors. While the link between market concentration and pricing power is not straightforward, exerting pricing power and achieving economies of scale is more difficult in fragmented markets, with a large number of small competitors (see ECB, 2019). In this regard, the ECB (2015) points out that higher profitability is associated with higher concentration to a significant extent, while also highlighting that overcapacity and low concentration in certain EA domestic markets seem to be exerting a significant negative impact on profitability compared with the US banking system, where concentration is greater. Lack of consolidation activity in the banking system might explain overcapacities in the euro

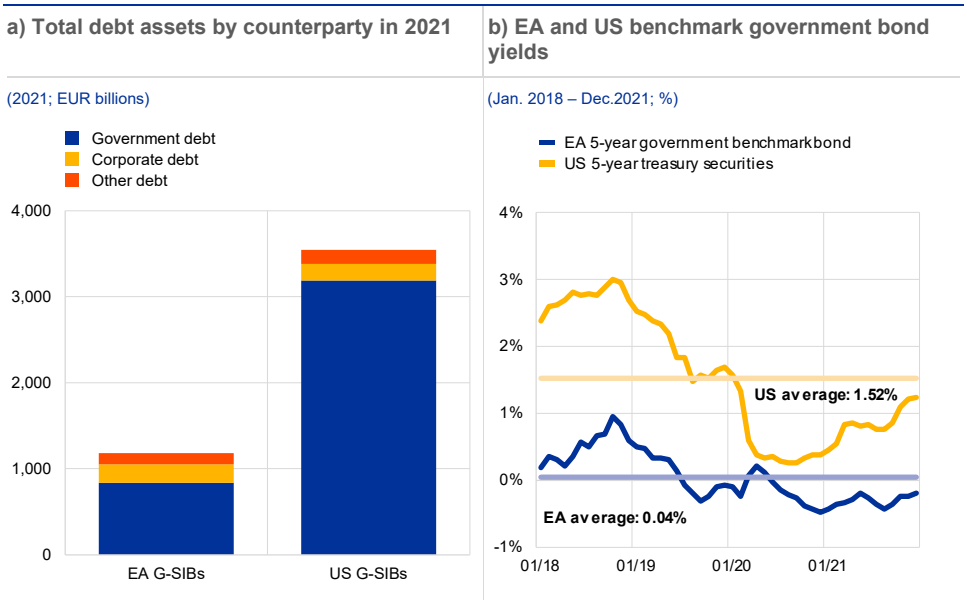
[13] While the precise drivers of this gap widening cannot be identified due to limitations on data availability, two underlying factors can be highlighted, namely (i) levels of interest rates (proxied by benchmark rates in the chart) and (ii) differences in provisioning practices.

area compared with more dynamic merger and acquisition (M&A) activities in the North American and Free Trade Agreement (NAFTA) banking systems. However, in the last few years, the number of M&A deals among domestic banks in the EA suggests the system may be undergoing some consolidation (see Gardó and Klaus, 2019 and ECB, 2021a).

Besides L&As, the debt portfolio also generates a significant flow of NII for US G-SIBs, whose debt holdings are particularly large. In 2021, debt portfolios amounted to 3.5trn EUR for US G-SIBs (27.6% of total assets), while the share was significantly smaller in the case of EA G-SIBs, c.1.2trn EUR (10.1% of total assets). In both jurisdictions, these portfolios are mainly composed of sovereign debt (**Chart 11, panel a**): domestic benchmark government bond yields could therefore be an accurate proxy in ascertaining the average remuneration that banks in the two jurisdictions may have received in the last few years (**Chart 11, panel b**). In this regard, assuming that there is a domestic bias in the composition of banks' debt portfolios, the gap in the remuneration received may have been somewhere around 1 to 1.5 percentage points over the period under review. In 2021, factoring in the effect of differences in volume, NII on debt holdings may have been up to around 35-50bn EUR higher for US G-SIBs, making a positive contribution to the profitability gap of up to 3.5-4.5 percentage points.[14]

Chart 11

Size, composition, and remuneration of debt portfolios for EA and US G-SIBs



Sources: Panel a): ECB supervisory reporting and Bureau van Dijk's Orbis database. Panel b): ECB SDW and Federal Reserve of St. Louis.
Notes: Panel a): the sample comprises EA and US G-SIBs. Corporate debt includes debt from NFCs and other financial corporates (OFCs), while other debt includes, among others, debt issued by credit institutions (CIs). Throughout the paper, data for US G-SIBs has been converted from USD to EUR using the exchange rate value prevailing on the last day of 2021, i.e. 0.88292. Panel b): For the EA benchmark bond, the German Bund 5-year yield is shown.

[14] The contribution to the profitability gap is likely to be smaller, as the benchmark rate used for EA G-SIBs is the German Bund yield and banks are probably invested in other euro area jurisdictions, which are usually priced at a higher yield.

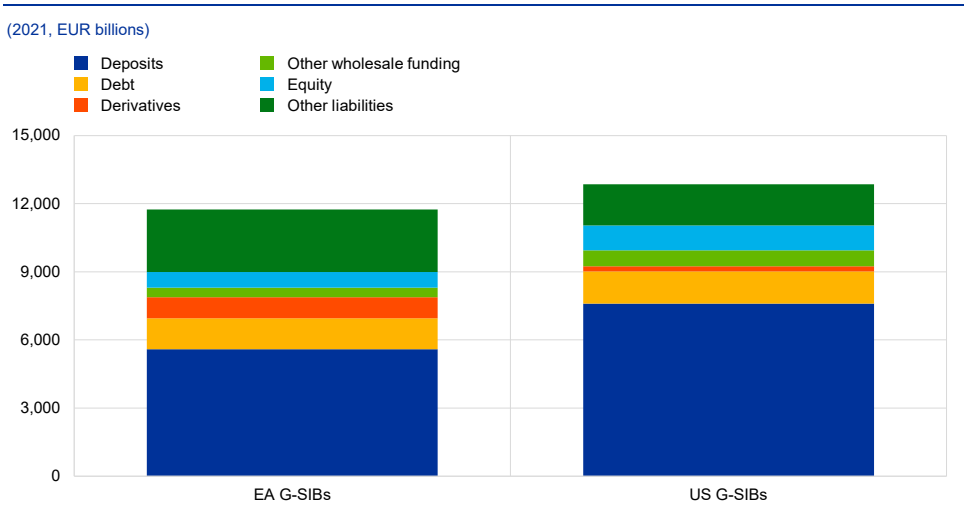
4.1.1.2 Interest-bearing liabilities

As regards interest expenses, structural differences in the cost of funding component are worth considering on a standalone basis. In this regard, Feng and Wang (2018) point towards European banks' higher funding costs as one of the factors that help explain their lower profitability compared with US banks. In this section, we review the differences in funding structures and associated costs between jurisdictions. In particular, we focus on the interest expenses associated with retail deposits and issued debt, which make up the bulk of external funding for both EA and US G-SIBs' liabilities (**Chart 5, panel a**).

Looking at the funding structure, we observe that US G-SIBs rely more heavily on deposits, while dependence on issued debt is fairly similar between jurisdictions. The composition of banks' funding structures differs markedly between jurisdictions, with US G-SIBs leaning much more towards deposits than EA banks (59.1% versus 47.6%), with this being the main source of funding in both jurisdictions. Regarding debt, the difference is relatively minor, with issued debt representing more than 11% of total liabilities (including equity) for both EA and US G-SIBs (see **Chart 12**). Other liabilities are larger in the case of EA banks, due to their more sizeable deposits held with central banks and governments, plus gross derivatives. While EA banks have historically been more reliant on more expensive sources of funding, the greater role played by central bank funding in the last few years has positively contributed to banks' funding costs in the EA. In particular, EA G-SIBs seem to have replaced some wholesale funding with ECB liquidity, the outcome being a reduction in their overall cost of funding. Furthermore, TLTRO III also exerted downward pressure on bank bond yields in 2021 (see Barbiero et al., 2021).

Chart 12

Funding structure composition for EA and US G-SIBs in 2021



Sources: ECB supervisory reporting, Moody's Analytics BankFocus database and ECB calculations.
Notes: The sample comprises EA and US G-SIBs. Other wholesale funding includes repos, subordinated liabilities, and preference shares accounted for as debt. Other liabilities are computed as a residual category and include trading liabilities (excluding derivatives) and other liabilities and provisions.

US G-SIBs' larger share of deposits may relate to the broader deposit base in the United States, as well as to the higher concentration among big players, as costs are fairly similar to those of EA G-SIBs. The previous literature documents a gap in the cost of retail funding between the two jurisdictions, which seems to have been a historical constant and dates back to at least the early 2000s (Weigand, 2015). However, in order to compare the interest expenses paid on retail deposits, some national specificities have to be accounted for. In particular, the higher cost of deposits of the EA banks, as shown in **Chart 13** (dark blue and yellow lines) relates to the existence of administratively regulated saving deposits, for which the interest rates and/or terms and conditions are specified in national legislation.[15] EA banks act as agents that collect these regulated deposits on behalf of the government, which then uses part of this funding to finance projects of common interest (e.g. social housing).[16] The banks are partially compensated for the higher remuneration associated with regulated deposits by the government, which ultimately bears most of the cost.[17] Since these specific deposits make up the bulk of the EA G-SIBs' household deposits with more than two years of original residual maturity, we have excluded this category so that we can compare market-driven interest expenses paid on retail deposits (see the light blue line in **Chart 13**). In the recent past, over the years 2020-21, interest expenses paid on deposits have decreased considerably for both EA and US G-SIBs, partly reflecting the easing monetary policy stance. In 2021, interest expenses on retail deposits were around 0.07-0.08% for both EA and US G-SIBs.

15 Most of these regulated saving deposits are located in France and Germany and mostly used to finance social housing. In France, the most common are the Plan Épargne Logement (PEL), the Livret A, and the Livret de Développement durable et solidaire (LDDS) (see also Banque de France). The interest rates associated with these regulated deposits are often higher than market rates as they are subsidised by the French government.

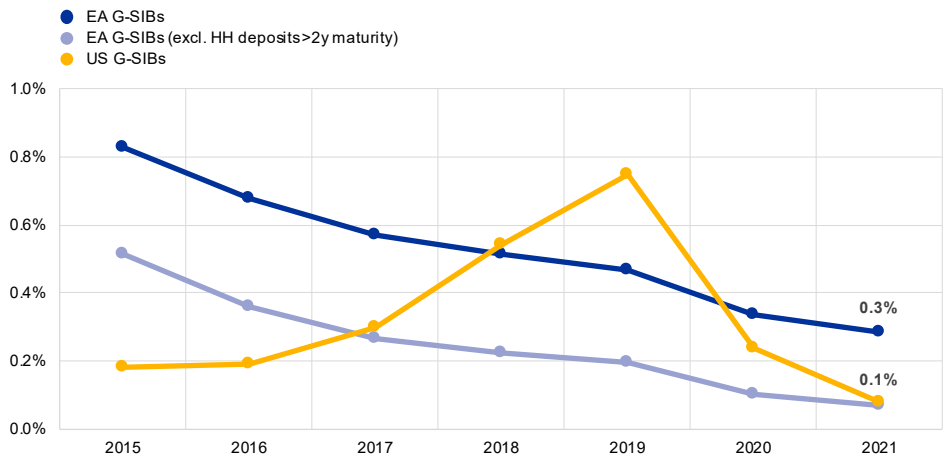
16 See also the Caisse des Dépôts' annual report on the Fonds d'épargne for 2021.

17 The promotional bank, Caisse des Dépôts et consignations (CDC) centralises the French regulated savings on behalf of the government.

Chart 13

Interest expenses paid on retail deposits for EA and US G-SIBs

(2015-21, %)



Sources: ECB MFI interest rate statistics, Moody's Analytics BankFocus database, and ECB calculations.
Notes: The sample comprises EA and US G-SIBs. For the euro area, retail funding includes deposits of households (HHs), NFCs and OFCs (excluding repos) and the corresponding price is estimated via a weighted average, with the weights being the banks' total retail funding. For the United States, the price is given by the ratio of interest expenses on customer deposits to the corresponding outstanding stock.

Unlike interest expenses paid on retail deposits, the costs associated with issued debt seem to have been higher for US G-SIBs when compared with their EA peers. Considering the relative volatility of wholesale funding and the risks that it entails, it is worth focusing on the difference in wholesale funding costs between jurisdictions. In 2021, interest expenses paid on long-term issued debt, including costs associated with subordinated instruments, were higher for US G-SIBs, being the average interest rate paid by EA G-SIBs at around 1.45% (i.e. 18bn EUR in absolute terms), while the one paid by US G-SIBs stood at around 1.66% (i.e. 25bn EUR).[18] The gap in funding costs can be divided into three components, namely the risk-free rate, the credit risk premia, and the liquidity risk premia. The risk-free rate is mainly driven by monetary policy rates, which remained lower in the euro area than in the United States (see **Chart 1** in **Box 1**). The latter two components can be proxied by metrics such as credit default swaps (CDS) and other indicators commonly used to measure funding conditions of large banks, such as the LIBOR-OIS spread.[19] The following two paragraphs focus on these aspects.

In 2021, the credit risk perceived by market participants was, on average, more moderate for EA G-SIBs than for US G-SIBs. As highlighted by the credit default swap premia for 5-year senior debt issued by the G-SIBs, in 2021 credit risk was higher on average for the US banks, which partially explains the gap in funding

[18] In the case of EA G-SIBs, the bulk of the subordinated instruments issued by banks takes the form of subordinated debt. The associated funding costs are therefore accounted for as interest expenses and reflected in the P&L statement. In contrast, the bulk of the subordinated instruments issued by US G-SIBs takes the form of preferred shares, on which banks pay dividends. Therefore, in order to ensure comparability between jurisdictions, the figure for US G-SIBs also includes dividends paid on preferred shares.

[19] The LIBOR-OIS spread is defined as the difference between the (London) Interbank Offered Rate (cost of unsecured interbank loans) and the Overnight Interest Swap. This metric is obtained from data on interbank market instruments, being a suitable proxy for the funding costs of large banks. As it relies on traded contracts, it reflects the market price of funding.

costs. Nonetheless, it is worth noting that US banks' CDS premia, although recently trading at a higher level than EA G-SIBs, have not shown the sort of idiosyncratic stress evident for some EA G-SIBs in the post-2014 period, when a number of banks routinely had premia exceeding 100 basis points (see **Chart 14, panel a**). Overall, banks' default risk is driven by macroeconomic and financial conditions related to the operating environment, as well as by bank-specific idiosyncratic aspects, such as solvency, loan loss provisions and size. In this regard, Arnould et al. (2022) point out that banks' fundamentals seem to play a minor role in driving funding costs for EA banks, while aspects related to sovereign risk, financial market uncertainty and monetary policy appear to be material drivers.

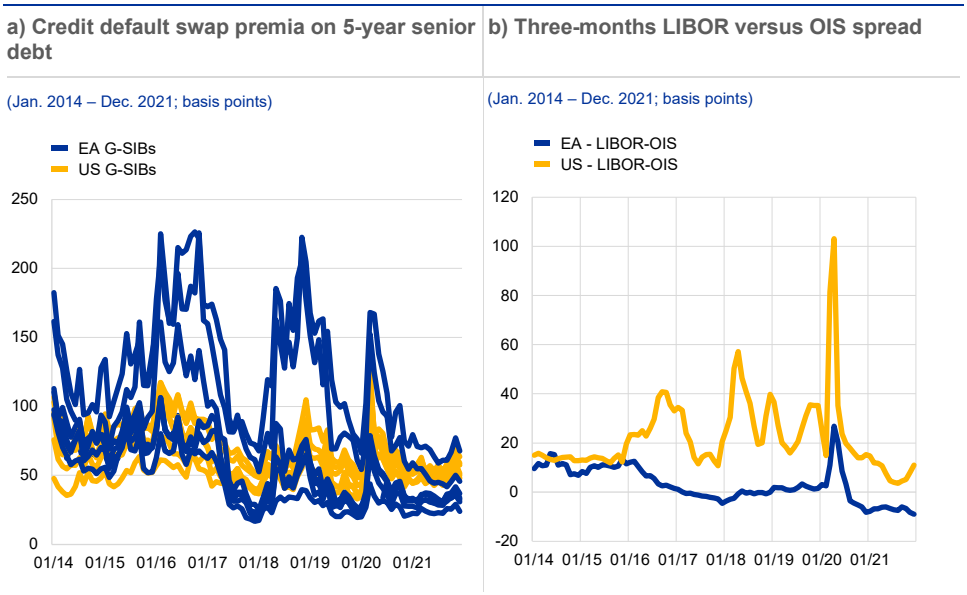
Market liquidity helps to shed more light on the gap in banks' funding costs and its evolution in recent years. The LIBOR-OIS spread reflects rollover risk, mainly relating to systemic funding liquidity risk for the banking system operating in a given currency, and therefore encompassing the risks of a market freeze in that currency.[20] The literature provides evidence in this direction, suggesting that the liquidity premium is the predominant component in the LIBOR-OIS spread during systemic crises and for short- and medium-term fluctuations (see, for example, Bernanke, 2018). Looking at this metric, inter alia, Jondeau et al. (2020) analyse the evolution of banks' funding costs in the euro area and the United States and highlight the role played by market liquidity. According to this investigation, differences in market liquidity between jurisdictions might also help explain the gap in banks' funding costs and its evolution (see **Chart 14, panel b**).[21] In this regard, the authors show that the abundant liquidity prevailing in the EA financial system helps to explain the smaller impact of the COVID-19 shocks on banks' funding costs, compared with the more serious consequences suffered by banks in the United States, where liquidity was more moderate.

[20] It may also include systemic credit risk for LIBOR-participating banking system counterparties, although the idiosyncratic credit risk will be captured by CDS prices, as discussed in the previous paragraph.

[21] By the end of 2021, excess liquidity held by euro area banks amounted to circa 4.5trn EUR, which is almost twice as large as the equivalent figure in the United States. In particular, domestically chartered commercial banks in the US held around 2.5trn EUR in cash (see ECB and Federal Reserve System data).

Chart 14

Credit risk and liquidity premia in EA and US G-SIBs' funding costs



Sources: Panel a): Financial markets data via ECB SDW. Panel b): Jondeau et al. (2020), Global Rates, and Bloomberg Finance L.P.
Note: The sample comprises EA G-SIBs (excluding BPCE Group due to data availability) and US G-SIBs (excluding Bank of New York Mellon Corporation and State Street Corporation).

Box 1

Implications of macroeconomic and interest rate conditions for banks' margins

In the aftermath of the Global Financial Crisis (GFC), a protracted recovery led central banks in the advanced economies (AEs) to support economic activity via conventional and unconventional monetary policy measures. While the main purpose of the expansionary monetary policy stance was to boost the economy by easing access to credit and incentivising consumption, the resulting interest rate conditions had implications for banks' profitability. On the positive side, accommodative monetary policy eases lending conditions thereby improving banks' profitability via increasing bank loan volumes, improving credit quality, and reducing funding costs (see Altavilla et al., 2018). The positive effects on loan growth materialise when there is demand for loans in the real economy, which allows for the transmission of the monetary policy. On the negative side, as policy rates approach the zero lower bound and the yield curve becomes flatter, monetary easing puts pressure on banks' maturity transformation by compressing net interest margins.

While the positive effects of lower interest rates on bank profitability prevail in the short run, a long- lasting low interest rate environment (LIRE) might exacerbate negative implications. Research suggests that the longer the LIRE lasts, the greater the negative effects on banks' profitability. These longer-term negative effects of LIRE are in large part associated with a narrowing of banks' NIM. As central bank interest rates fell, banks in turn lowered the interest rates they paid on deposits, until they reached their effective lower bound (around zero). In parallel, low interest rates also influence lending. As lending interest rates decrease faster than deposit interest rates and/or the latter reach their effective lower bound while lending rates continue to fall, the banks' NIMs narrow.

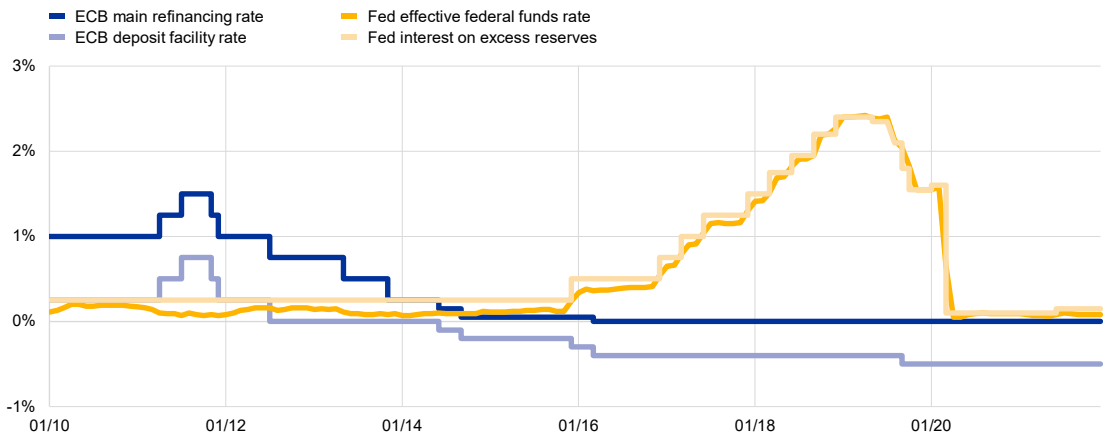
Overall, the impact of policy rates on banks' profitability is not linear, and potential negative effects may particularly be exacerbated when policy rates are negative. Hack and Nichols

(2021) document that the impact of low but above-zero policy rates (the situation that prevailed in the United States) has much milder negative implications for banks' NIM than negative policy rates (as was the case in the EA). In particular, negative policy rates have a much stronger impact on banks profitability due to banks' limited ability to pass along negative rates to depositors, as the impact is particularly strong on small banks, potentially due to their limited pricing power.

There are observable differences in overall interest rate levels between the United States and the euro area over the last two decades. The interest rate environment in the euro area has been lower than the interest rate environment in the United States in recent years (see **Chart B1.1**), partially explaining the gap observed in the NIMs collected by banks in the two jurisdictions. When looking at all FDIC-insured institutions, we can see that the NIM has fluctuated at around 3-4% in the United States in the last few years,[22] well above the figures observed in the European Union, which oscillated between 1.2-1.6%.[23] In general, the higher interest rate level in the United States and the more favourable development in rates, particularly between 2015 and 2019, seem to have given banks in the jurisdiction an advantage over EA banks.

Chart B1.1
Evolution of monetary policy rates in the euro area (ECB) and the United States (Federal Reserve System)

(Jan. 2010 – Dec. 2021; %)



Sources: ECB and Federal Reserve of St. Louis.

4.1.2 Net fee and commission income

Net fee and commission income (NFCI) is the biggest driver of the profitability gap between EA and US G-SIBs. The 2021 figure show a contribution of NFCI to ROE 7.25 percentage points higher for US G-SIBs than for their EA peers (**Chart 7**). Of all the banking activities that generate NFCI, in this section we focus on the main segments that differ between the jurisdictions. On the one hand, investment banking activities (see Section 4.1.2.1) help explain more than one third of the gap in NFCI

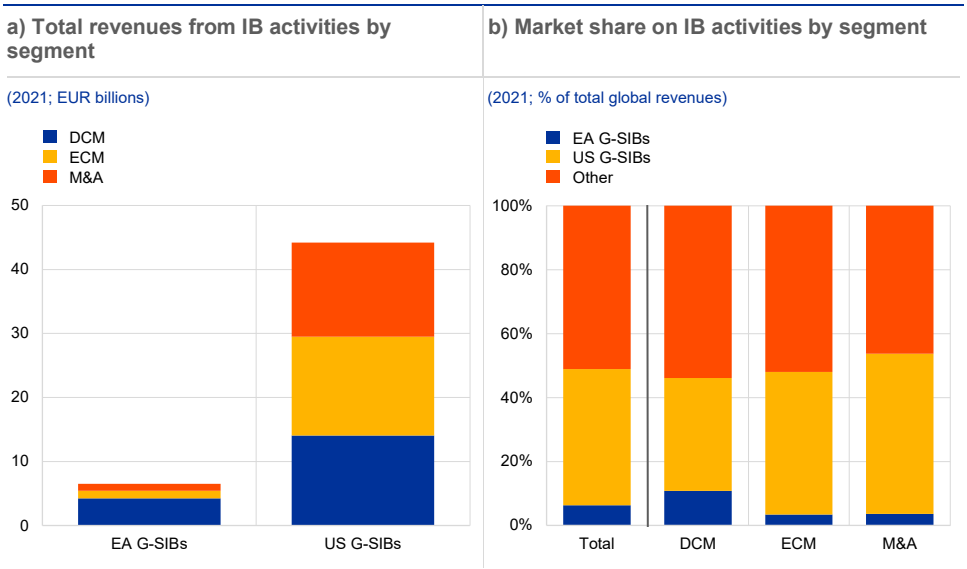
22 See FDIC data.
23 See EBA Risk Dashboard.

(around 2.2 percentage points).[24] On the other, mortgage loan securitisation (see Section 4.1.2.2) brought US G-SIBs extra profitability that contributed around 0.5-1 percentage points to the gap. While the aggregate data do not allow us to determine the exact contribution to NFCI, global market activities also generated higher fees for US banks (see **Box 2**).

4.1.2.1 Investment banking activities

Historically, the top US banks have dominated global IB, with their EA peers losing market share in recent years. In 2021, EA G-SIBs collected around 6.52bn EUR of total global IB fees, which represented around 6.3% of market share. In comparison, US G-SIBs collected around 44.2bn EUR, hence accruing for a much larger market share of around 42.6% (**Chart 15, panel a**).[25] In addition, in the last few years, US investment banks have steadily increased their global presence, to the detriment of the market share of the EA banks.[26] While the dominance of US competitors is generalised across market segments, their market share is particularly large in the areas of M&A and equity capital markets (ECM), which tend to be more lucrative than debt capital markets (DCM), where EA G-SIBs concentrate the bulk of their IB activities (**Chart 15, panel b**).

Chart 15
Revenues and market share of investment banking (IB) activities



Sources: Coalition Greenwich and ECB calculations.
Note: The sample comprises EA (excluding BPCE Group due to data availability) and US G-SIBs (excluding Bank of New York Mellon Corporation and State Street corporation due to data availability).

The relative size of the US and EA capital markets is a major driver of the relative performance of the investment banks in the two financial systems. The

[24] Due to missing data, the analyses in this section exclude from the samples Bank of New York Mellon Corporation, State Street Corporation and BPCE Group, thereby leading to a certain underestimation of the contribution of investment banking activities to the NFCI part of the ROE gap.

[25] See Financial Times.

[26] See Standard & Poor's.

combination of home bias (e.g. domestic counterparty preference) and barriers to entry has resulted in uneven access for global banks to the world's deepest capital markets and helps to explain the higher market share of US banks. According to the World Bank, the market capitalisation of listed domestic companies in the United States was 30.4trn EUR in 2018, almost six times larger than the comparable figure for the euro area (5.6trn EUR). As well as equity, the amount of outstanding US debt securities is nearly double. The United States' larger, more profitable, and more integrated capital markets give US G-SIBs access to sizeable trading and financing volumes, unparalleled in Europe.

More buoyant domestic capital markets in the United States are only part of the story, as US G-SIBs do not only dominate their domestic markets but are also displacing EA G-SIBs in the euro area capital markets. The prolonged success of US G-SIBs in their own domestic capital markets has enabled them to develop and leverage their expertise, reputation, distribution networks, scale and other sources of competitive advantage, in order to win business and serve a broader set of clients, including overseas. In fact, the global market share of US investment banks has been rapidly increasing since the aftermath of the GFC (see, for example, Goodhart and Schoenmaker, 2016). Today, the prominent presence of US G-SIBs prevails not only in their own domestic market, but also extends to the global sphere, including the EA capital markets. The US banks' penetration of EA markets is particularly noticeable in the high-yield segments (i.e. their market share is above 60% in M&A and around 40% in equity capital markets in the euro area). Their presence is smaller in syndicated loans and debt capital markets, which tend to be less profitable (see ECB, 2021b).

While the US banks have been expanding their IB activities geographically, their EA competitors have been engaged in a global retreat. The fallout from the GFC led many EA banks to withdraw from a global role in IB, which has translated into a downward trend in their global market share (see also ECB, 2018). Goodhart and Schoenmaker (2016) see the biggest EA players as "second tier" competitors focused on regional markets, while the "first tier" segment is entirely occupied by US global giants, which are preferred in the case of major and international deals and by institutions in need of complex or specialist advice. In the case of the EA banks, market fragmentation and the associated limited economies of scale also seem to be hampering the profitability of IB activities.[27] Overall, matching the breadth and depth of the US banks' franchises seems challenging and, despite various efforts, the EA investment banks have struggled to compete in the global capital markets.[28]

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27 Increasing competition among European banks, mainly driven by new entrants to capital markets-related activities seems to be pressuring margins. See Global Capital: "In 2006, the average number of bookrunners on a corporate bond issue denominated in euros was 2.25. By 2017, that had risen to nearly five".

28 Deutsche Bank, the largest European investment bank, sought to expand its investment banking activities around the 1990s, with the acquisition of a controlling stake in Morgan Grenfell and the purchase of Bankers Trust Corporation. See also Standard & Poor's.

4.1.2.2 Mortgage loan securitisation

Mortgage loan securitisation is an additional source of NFCI for US banks. The originate-to-distribute lending model allows banks to generate NFCI (e.g. loan origination and other servicing fees) while off-loading credit risk exposures to third parties' balance sheets. In this regard, the issuing lender continues to serve the mortgage loans sold to third parties, for which it receives a fee. In the United States, the third parties are generally GSEs, which usually lack the capacity to manage the loans acquired from the banks and therefore outsource this service to the bank that originated the mortgage. As part of this debt servicing agreement, banks are expected to perform various tasks, including collecting recurring mortgage payments made by customers (which are then transferred to the GSEs) and managing the customer relationship. The servicing fee is designed to compensate the banks for the costs they incur when continuing to serve these mortgage loans (e.g. back-office processes, staff, IT and real estate costs related to branches).

The securitisation market is much more developed in the United States than in the euro area. In 2021, outstanding volumes in the US securitisation market amounted to almost 11trn EUR, more than ten times larger than the European market, which stood below 1trn EUR.[29] Most of this discrepancy between jurisdictions relates to the support provided by US GSEs.[30] In particular, GSE mortgage-backed securities (MBS, also referred to as "agency MBS") in the United States accounted for around 88% (9.7trn EUR) of overall MBS outstanding volumes in 2021.[31] In the European Union, the creation of the Simple Transparent and Standardised (STS) securitisation framework sought to revive the securitisation market. Since this new framework was put in place in 2019, the number of securitisations per year has remained relatively stable (comparing 2021 with 2019), with STS asset-backed securitisation (ABS) representing around 30-40% of total ABS issuance in Europe.[32] So far, this new framework does not seem to have helped to close the profitability gap.

Major US banks have recently retrenched from this business, with non-bank lenders filling the void. In order for lenders to sell mortgages to US agencies, loans have to comply with certain criteria, such as the conforming loan limits (CLLs) which mean that loans above certain amounts cannot be sold to agencies.[33] However, over the past decade, US banks have focused on wealthier rather than first-time borrowers, and low and middle-income households, which are the typical target group for US agency-conforming mortgage loans and for whom non-bank lenders are often the only way to obtain a mortgage. These non-bank lenders have filled the space left by the larger US banks, and now account for about 50% of new US

29 See the AFME Securitisation Report for 2021.

30 These GSEs are the Government National Mortgage Association (GNMA or Ginnie Mae), the Federal Home Loan Mortgage Corporation (Freddie Mac), and the Federal National Mortgage (FNMA or Fannie Mae). These entities were created by acts of Congress and are designed to encourage homeownership by improving the flow of credit and reducing its cost. The aim is to facilitate access to mortgages for the middle and working classes.

31 See the SIFMA data.

32 Own calculations based on data from the Association for Financial Markets in Europe (AFME). The figure includes the United Kingdom.

33 See FHFA.

mortgages, as well as more than 50% of the principal amount of agency MBS being securitised.[34]

Nevertheless, securitisation is still an important source of profitability for US G-SIBs. The servicing fee earned by US banks is regulated and tends to follow a pre-defined pricing grid that depends on several parameters.[35] This figure is usually between 0.25% and 0.50% (as a percentage of the loan volume). Overall, in 2021, the average value of servicing fees earned by US G-SIBs was around 0.4%, which resulted in them receiving around 5-10bn EUR in total MBS-related servicing fees, making a positive 0.5-1 percentage points contribution to the profitability gap. Looking at the biggest mortgage lenders among the US G-SIBs, we observe that in 2021, JP Morgan Chase earned around 2.5bn EUR by securitising originated loans, while Wells Fargo earned around 2.2bn EUR.[36]

4.1.3 Net trading income

Net trading income (NTI) has also contributed to the profitability gap, with US G-SIBs profiting more from their larger trading portfolios, which are relatively more balanced towards equities. In 2021, the NTI earned by EA G-SIBs was around 24.5bn EUR, well below the figure reported by US G-SIBs, which amounted to 60.7bn EUR, making a positive contribution to the profitability gap of around 1.96 percentage points (**Chart 7**). This difference in NTI is supported by the larger trading portfolios of overseas banks, which becomes clear when focusing on gross derivatives exposures for US G-SIBs, in order to compare the figures with those of EA G-SIBs, subject to IFRS 9 rules on derivatives netting (**Chart 16, panel a**). In particular, gross trading assets represented almost 20% of the total assets of US G-SIBs, compared with 17.6% for EA G-SIBs. Not only do the overall amounts of the trading portfolios change between jurisdictions, but also their compositions. Looking closely at the differences by instrument (**Chart 16, panel a**), we observe that equity holdings are larger for US G-SIBs (3.5% versus 2.2%), compared with EA G-SIBs, whose debt security holdings are higher (6.9% versus 7.8%).

Overall, US G-SIBs enjoy a larger market share in trading activities than EA banks and have further increased their market dominance in recent years. The three US G-SIBs most active in trading activities (Goldman Sachs, JP Morgan Chase and Morgan Stanley) have been increasing their trading revenue market share since at least 2017, also at the expense of EA rivals. By 2019, the largest US players held almost 50% of global market share in stocks and bonds trading, while the market share accrued by all EA banks had decreased, to slightly more than 30%. The remaining market share is held by other US banks, including other US G-SIBs. For example, while Goldman Sachs increased its overall share by more than 5%

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34 See The Wall Street Journal.

35 See Fannie Mae's and Freddie Mac's servicing fees for MBS mortgage loans.

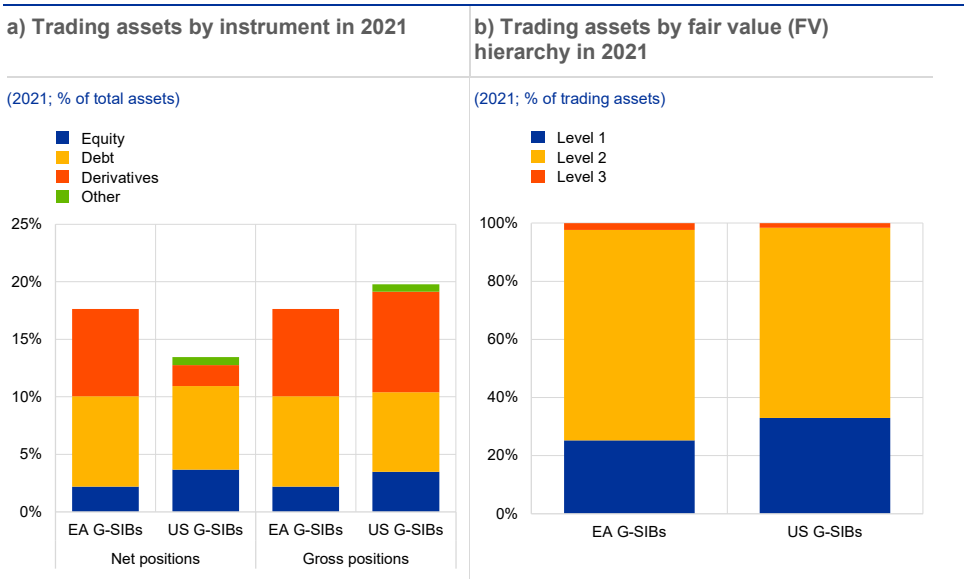
36 According to Home Mortgage Disclosure Act (HMDA) data on mortgage volumes, Wells Fargo and JP Morgan Chase were, respectively, the third and fifth-largest mortgage lenders in the United States in 2021. See also HousingWire.

between 2017 and 2020, Deutsche Bank experienced the steepest decline (-3.1%), partly due to its exit from the global equity business in 2019.[37]

The available information on the US banks does not allow for a detailed identification of which instruments lie behind these differences. The breakdown of trading assets by fair value (FV) hierarchy shows a greater prevalence of level 1 assets for US banks (33% of total trading assets) compared with EA G-SIBs (25%), as shown in **Chart 16** (**panel b**). Unreported data show that this gap in level 1 assets is almost entirely driven by debt instruments, as half of these are accounted for as level 1 assets in the balance sheets of US G-SIBs, while only around a quarter of debt instruments are categorised as level 1 by EA G-SIBs (for which around 70% of debt instruments are level 2 assets). While data availability does not allow profitability data to be retrieved for each of the instruments that make up the trading portfolio, Box B provides a deep dive into global markets (GM) activities, which encompass sales and trading activities related to FICC and equity instruments.

Chart 16

Size and composition of trading portfolios



Sources: ECB supervisory reporting and US G-SIBs' annual reports.
Notes: Panel a): The sample comprises all G-SIBs in the United States (exc. Wells Fargo) and all EA G-SIBs. The L&A category for EA G-SIBs is included under debt to follow US reporting conventions. Net and gross position differentiation applies to US banks only. Panel b): The sample comprises all G-SIBs in the United States (exc. Wells Fargo) and all EA G-SIBs. US trading assets are considered on a gross basis.

The higher trading revenues generated by US banks seem to be mainly enabled by their more developed technology, supported by larger IT investment budgets. Scale has become increasingly important in trading activities due to the electronification of processes (e.g. better connectivity to clients and venues and automatic market-making and pricing).[38] Developing economies of scale by investing in efficient technological solutions is of paramount importance in the case of flow markets. Efficient handling of the largest possible number of flow orders helps banks decrease their marginal costs and offset lower revenues per transaction

[37] See Bloomberg.

[38] See McKinsey.

with higher volumes, in order to maintain and increase revenues. This strategy allows banks to undercut competition and capture a large share of volumes, compensating for the narrower bid-offer spreads applied. In turn, access to better electronic platforms, tools and sources of information enables banks to process greater volumes and price more effectively. However, given the importance of reaping economies of scale via technological prowess, only a limited group of banks in each asset class can be truly competitive. This creates a tendency towards market concentration among the largest and most technologically powerful competitors.

Box 2
Global Markets activities and the profitability gap

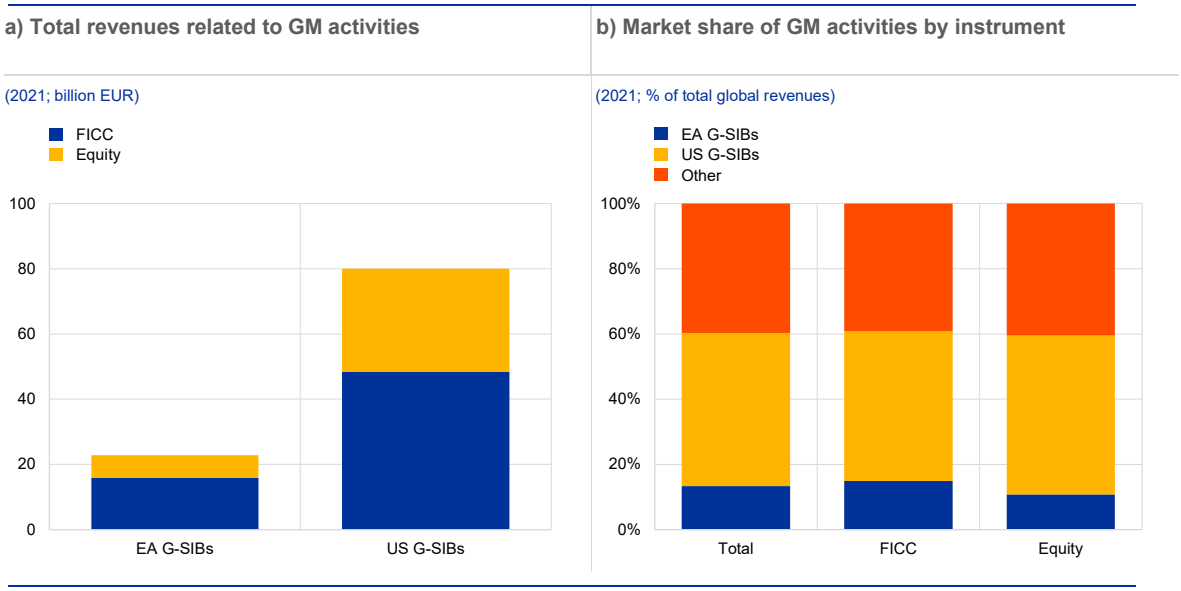
Global Markets (GM) activities encompass the sales and trading of fixed income, currency and commodity instruments (FICC), as well as equity income, for which banks obtain both fees and commissions and trading income. As part of their GM activities, banks do not only generate trading profits and losses by acting as market-makers and hence leveraging on bid-ask spreads (i.e. pure "trading" activities stemming from open positions in the markets), but they also offer fee-generating trading-related solutions to clients. In this regard, management of trading accounts, clearing and settlement services, as well as access to real time prices, are some of the various services for which banks collect fees and commission from their clients. Therefore, this Box takes a business line perspective and focuses on GM revenues, where aggregate data does not allow for the direct allocation of these amounts to NFCI nor NTI.

Focusing on the 2021 figures, the gap between EA and US G-SIBs, taking both NFCI and NTI into account, amounts to around 161bn EUR, out of which 57bn EUR is attributable to GM activities. While EA G-SIBs generated around 23bn EUR (13.4% of global market share) from their GM activities, the comparable figure for their US peers was significantly higher, at 80bn EUR (46.9% of global market share) in 2021. For EA banks, global market activities are particularly focused on FICC instruments, while US G-SIBs are more diversified towards equity instruments (see **Chart B2.1**).

Agency-generated MBS are also a modest contributing factor, offering opportunities to benefit further from the trading of these securities. At the end of 2020, revenues from trading MBS at the biggest global banks including JP Morgan Chase, Citigroup, and Goldman Sachs topped approximately 2.7bn EUR billion, exceeding the peak of 2.2bn EUR recorded in 2019. For these three US G-SIBs, FICC net revenue was around 45bn EUR that year, with MBS-related trading revenue representing around 6%.

Chart B2.1

Revenues and market share of global markets (GM) activities



Sources: Coalition Greenwich and ECB calculations.
Notes: The sample comprises EA (excluding BPCE Group due to data availability) and US G-SIBs (excluding Bank of New York Mellon Corporation and State Street Corporation due to data availability).

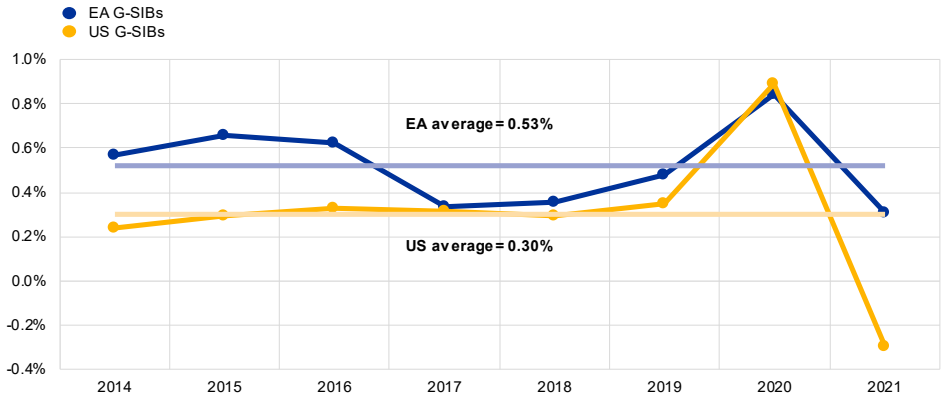
4.2 Impairments and provisions

Impairments and provisions also help to explain part of the profitability gap in favour of US G-SIBs, which seem to have a structurally lower cost of risk compared with EA G-SIBs. For the past eight years, US G-SIBs have benefited from a structurally lower cost of risk, which averaged around 0.3% of total gross L&As, while the comparable figure for EA G-SIBs is considerably higher, at 0.53%. In 2020, the implementation of the Current Expected Credit Losses (CECL) accounting method resulted in impairment charges reacting rapidly to the coronavirus (COVID-19) pandemic in the United States, which explains the substantial increase in the cost of risk during this year (**Chart 17**). The main drivers behind the structurally higher cost of risk for EA G-SIBs side seem to be connected with (i) their greater amount of NPLs and (ii) the different accounting standards.

Chart 17

Evolution of cost of risk

(2014-21; percentage points)



Sources: ECB supervisory reporting, Moody's Analytics BankFocus database and ECB calculations.
Notes: The sample comprises EA and US G-SIBs. The cost of risk for EA banks is computed as "impairment or (-) reversal of impairment on L&As not measured at fair value through profit or loss" over "total gross L&A subject to impairments" until 2017 and beyond (IFRS 9 introduction) according to the European Banking Authority (EBA) definition. For the United States, the definition has been reconciled as much as possible and cost of risk is calculated as "net impairment charges on L&As" divided by "total gross L&A".

The higher proportion of NPLs in the books of EA G-SIBs might help to explain their higher cost of risk. While US G-SIBs appear to be more exposed to riskier types of loans, as their portfolios are tilted toward commercial real estate and consumer loans, in contrast with EA G-SIBs' relatively large exposures to RRE and corporate loans (**Chart 9**), they still have lower NPL ratios, which helps to explain their lower impairment charges (**Chart 4, panel b**).[39] In this regard, over the last few years, EA G-SIBs have carried out significant write-offs of NPLs, for which they needed to build up the necessary provisions, thereby increasing the cost of risk.

The contribution of impairments and provisions to the profitability gap between EA and US G-SIBs was particularly large in 2021, reflecting the post-pandemic release of impairments. In 2021, the contribution of impairments and provisions to the ROE gap amounted to 5.32 percentage points, significantly more than in previous years. In particular, in 2021, EA G-SIBs recorded around 24.6bn EUR in their P&L statements for booked impairments and provisions. Conversely, in aggregate, US G-SIBs released past provisions, thereby increasing their profits by around 19.1bn EUR. Therefore, the release of COVID-19 pandemic-related impairments booked during the previous year (much larger for US G-SIBs) helps to explain the gap. Although US G-SIBs had an exceptionally high cost of risk in 2020, which reached levels comparable to EA G-SIBs, the contribution of this P&L item to the profitability gap was nevertheless positive (**Chart 7**). The explanation lies in extraordinary one-off non-financial provisions booked by some EA G-SIBs.

Relatively recent changes in EU and US accounting standards may drive the way in which cost of risk affects profitability, but further work is needed to fully understand their implications. While IFRS 9 has been in force in the EU since 2018, US G-SIBs have been applying the CECL model since 2020. Going

[39] See European Banking Authority (2021), "Differences in Provisioning Practices in the United States and the European Union", Thematic Note EBA/REP/2021/13. The sample for the EU is 160 European banks (unconsolidated number of banks, including 30 subsidiaries) as at 31 December 2020.

forward, these accounting standards may result in higher levels of impairments in the United States, as CECL requires a lifetime expected credit loss (LECL) calculation for IFRS 9 Stage 1-type loans, while a 12-month ECL calculation would apply in the EU. Compensating factors for the United States could be the more liquid NPL market and a potentially more effective bankruptcy law that could require the recognition of lower levels of impairment. This is certainly an area for follow-up exploration going forward.

4.3 Other operating income and expenses

4.3.1 Staff expenses and IT budget

Other operating expenses have been structurally higher for US G-SIBs since 2016, largely driven by the US propensity for higher staff remuneration and more sizeable IT investment budgets. Both staff expenses and other expenses (including technological investment) appear to have been larger for US G-SIBs, making a negative contribution to the profitability gap. In 2021, staff expenses were around 166.5bn EUR for US G-SIBs, while the comparable figure for EA G-SIBs was around 85bn EUR, explaining the -3.01 percentage points effect of this driver on the ROE gap (**Chart 7**). This figure reflects the fact that US G-SIBs spent twice as much as EA G-SIBs on staff expenses, although the total amount of their assets was comparable (around 12trn EUR for both jurisdictions). The bulk of this difference relates to US G-SIBs' higher compensation and benefits per employee, as the gap in the total headcount is comparatively smaller. In particular, in 2021, US G-SIBs' workforce was around 26.5% larger that for their EA peers (1.159 vs. 916 thousand full-time equivalent employees) (see **Table 1**), while unitary labour costs were around 55% higher. Similarly, other administrative and non-administrative expenses were also twice as high for US G-SIBs (121bn EUR) than for their EA peers (60bn EUR), making a contribution to the profitability gap of -2.33 percentage points (**Chart 7**). While these P&L items contribute more to the profits of EA banks than to those of US G-SIBs, they should not be looked at in isolation. Instead, these seem to be crucial areas that allow US G-SIBs to build up competitive advantages and help explain their higher levels of profitability in other areas, such as NFCI and NTI-generating activities. Due to the lack of granular and fully harmonised data on staff remuneration and IT investments, the insights collected in this section mainly derive from anecdotal evidence and the screening of banks' financial statements and press articles. A more thorough analysis would be needed to produce a detailed quantification of the relevance of these drivers.

Table 1
US and EA G-SIBs' headcount and personnel expenses in 2021

Institution (source)	Number of employees	Compensation and benefits expenses
Bank of America Corporation	208.000	~31.9bn EUR
Bank of New York Mellon	49.100	~5.6bn EUR
Citigroup	223.400	~22.2bn EUR
Goldman Sachs Group	43.900	~15.6bn EUR
JP Morgan Chase	271.025	~34.1bn EUR
Morgan Stanley	75.000	~21.7bn EUR
State Street Corporation	38.784	~4.0bn EUR
Wells Fargo & Company	249.435	~31.4bn EUR
Banco Santander	192.505	~11.2bn EUR
BNP Paribas	189.765	~16.4n EUR
BPCE Group	99.900	~11.2bn EUR
Deutsche Bank	82.969	~10.4bn EUR
Group Crédit Agricole	75.711	~13.1bn EUR
ING Group	91.458	~5.8bn EUR
Société Générale	131.293	~9.8bn EUR
Unicredit	78.571	~7.0bn EUR

Sources: Banks' annual reports and press releases.
Notes: For consistency throughout the document, the foreign exchange rate used to convert the staff compensation and benefits expenses of US G-SIBs to euro is 0.88292 EUR/USD (exchange rate at 31/12/2021). Total compensation and benefits expenses include salaries and wages, social security, contributions to pension funds as well as other staff costs. The number of employees refers to full-time equivalent (FTE) figures when available.

The higher salaries and bonuses offered by US banks seem to allow them to attract and retain talent, making it more difficult for their EU peers to compete for such workers. Among other reasons, the ability of US G-SIBs to compete for the most talented staff via attractive compensation schemes might be, at least partially, enabled by their higher profitability. Therefore, financial performance may be creating a vicious cycle that favours US competitors, as better talent leads to higher profitability, which then enables the retention and hiring of more cutting-edge talent. IB activities are a clear example, as US banks are able to pay out larger salaries from the early career stages and also have larger bonus pools for compensating strong performance.[40] For example, in 2021, Goldman Sachs increased its bonus pool for IB employees by around 50%, while the increase was around 40% for JP Morgan Chase investment bankers (M&A advisory and underwriting groups).[41]

A similar trend seems to be developing in IT capability in which US G-SIBs invest more than their EA peers. While the largest US G-SIBs spend around 8-11bn EUR on IT investments annually, the budget for the top EA banks is around 3-6bn EUR (see **Table 2**). In aggregate, this results in a total gap of around 24.2bn EUR (46.7bn EUR vs. 22.5bn EUR) when considering all G-SIBs in both jurisdictions. This difference is not driven by their overall sizes, as in aggregate we observe that the annual IT budget for US G-SIBs in 2021 was around 0.36% of total assets, while the comparable figure for EA G-SIBs remained at 0.19%. The higher profitability levels of US banks compared with the EA banks also enables them to

40 See also CNBC and Financial News.

41 See also Bloomberg and JP Morgan Chase via eFinancial Careers.

build more sizeable IT budgets. This relationship between financial performance and tech spending also seems to exist at the EA banks, as shown by Bertay and Huizinga (2021). Higher IT investments may provide a competitive edge to US G-SIBs in an ever-more digitalised banking business environment, not only in terms of evolving consumer preferences, but also in terms of the efficient running of the bank itself. To this end, past research has found that banks' IT investments may also encourage customers to adopt more digitalised channels, which then enables banks to improve their productivity and efficiency (see also Carbó-Valverde et al., 2020).

Table 2
US and EA G-SIBs' annual IT budgets in 2019-22

Institution (source)	Annual IT budget
Bank of America Corporation	~8.8bn EUR (~0.31% of TA)
Bank of New York Mellon	~2.6bn EUR (~0.66% of TA)
Citigroup	~8.8bn EUR (~0.43% of TA)
Goldman Sachs Group	~3.5bn EUR (0.27% of TA)
JP Morgan Chase	~10.6bn EUR (0.32% of TA)
Morgan Stanley	~2.4bn EUR (0.23% of TA)
State Street Corporation	~2.1bn EUR (0.76% of TA)
Wells Fargo & Company	~7.9bn EUR (0.46% of TA)
Banco Santander	~5bn EUR (0.32% of TA)
BNP Paribas	~6bn EUR (0.25% of TA)
BPCE Group	~0.6bn EUR (0.04% of TA)
Deutsche Bank	~3.25bn EUR (0.25% of TA)
Group Crédit Agricole	~3.75bn EUR (0.20% of TA)
ING Group	~0.85bn EUR (0.09% of TA)
Société Générale	~2.1bn EUR (0.16% of TA)
Unicredit	~0.9bn EUR (0.10% of TA)

Sources: Banks' financial statements and press releases.
Notes: Figures are provided as both absolute amounts (bn EUR) and as a percentage of the bank's total assets. For some banks, information about IT investments is released for periods of several years: in such cases, the reported figure represents the simple annual average. All values are approximated. For consistency throughout the document, the foreign exchange rate used to convert the IT budgets of US G-SIBs to euro is 0.88292 EUR/USD (exchange rate at 31/12/2021).

4.3.2 Tax expenses

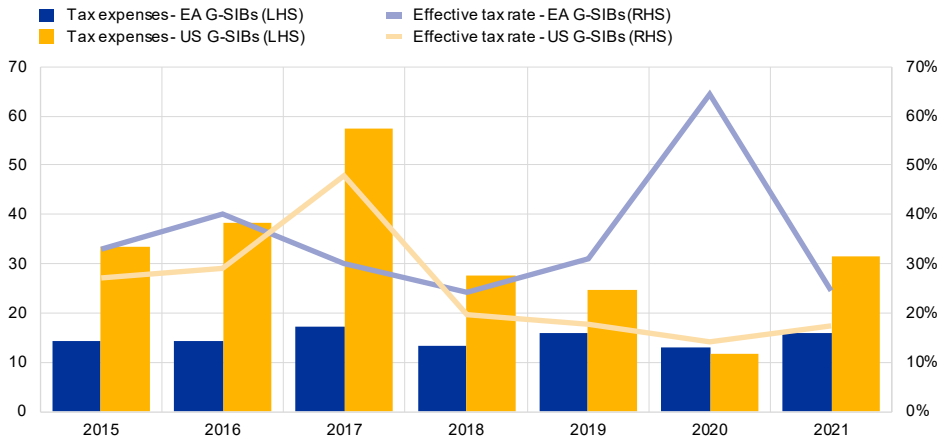
Although tax expenses are not a structural driver of the differences in profitability, a material tax reform in the United States caused the usual profitability gap to narrow significantly in 2017. The contribution of tax expenses

to the profitability gap is rather negligible during the period under review (see **Chart 7**). In particular, while US banks have experienced higher tax expenses, these amounts have been driven by their much larger profits. In relative terms, looking at the effective tax rate, we observe that it has been higher for EA G-SIBs for all years except 2017 (**Chart 18**). In particular, the significant derecognition of deferred tax assets resulting from the decrease in the corporate tax of US G-SIBs in 2017 resulted in a negative contribution to the ROE gap of 3.22 percentage points (**Chart 7**).

Chart 18

Annual tax expenses and effective tax rates for EA and US G-SIBs

(2015 - 21; LHS: billion EUR; RHS: percentage points)



Sources: ECB supervisory reporting, Moody's Analytics BankFocus database, and ECB calculations.
Notes: The sample comprises EA and US G-SIBs. The effective tax rate is computed as the ratio of the annual tax expenses to the pre-tax profit for that year.

The Tax Cuts and Jobs Act (TCJA), signed into law on December 2017, decreased the US federal corporate tax rate from 35% to a flat 21%, effective as of 1 January 2018. While the TCJA has substantially reduced banks' tax expenses since 2018, it created major accounting challenges in 2017.[42] In particular, the application of Topic 740 (on "Income Taxes") in Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) requires the adjustment of deferred tax assets and liabilities in response to changes in tax laws and the reporting of the effect of such changes on net income in the year of enactment. As stated by Wagner et al. (2020), the TCJA had two main non-recurrent effects on firms' profitability in 2017, namely the remeasurement of deferred tax assets (DTAs) and deferred tax liabilities (DTLs) and the deemed repatriation tax on the unrepatriated foreign earnings of multinationals.

In 2017, the valuation adjustment of DTAs and DTLs resulted in an overall one-off negative impact of the TCJA on the profitability of US G-SIBs. The lower tax rate prompted banks to write down the valuation of their DTAs and DTLs. As, in aggregate, US G-SIBs had prior net DTAs, this one-off revaluation had a to a negative effect on their profitability in the fiscal year 2017. For all US G-SIBs, we observe that the tax expenses attributed to the TCJA amounted to around 25bn EUR

42 See Federal Reserve System.

in 2017 (**Table 3**), an impact that appears largely driven by Citigroup (19bn EUR), followed by Goldman Sachs (3.7bn EUR), and Bank of America Corporation (2.4bn EUR).[43]

Table 3

Effect of the Tax Cuts and Jobs Act (TCJA) on US G-SIBs in 2017

Institution (source)	Stated impact of TCJA
Bank of America Corporation	"Results for 2017 included an **estimated reduction in net income of $2.9 billion due to the Tax Act,** driven largely by a lower valuation of certain U.S. deferred tax assets and liabilities."
Bank of New York Mellon Corporation	"We recognized a **$48.3 million and $26.7 million tax benefit related to the estimated impact of tax legislation enacted in 2017** and the accounting change for stock-based compensation guidance for the full year 2017, respectively."
Citigroup	"Citi's full-year 2017 results included the **updated estimate for a one-time, non-cash charge of $22.6 billion** (…) **related to the enactment of Tax Reform**. (…) This charge was composed of a $12.4 billion remeasurement of Citi's deferred tax assets (DTAs), a $7.9 billion valuation allowance against Citi's foreign tax credit (FTC) carry-forwards and its U.S. residual DTAs related to its non-U.S. branches, and a $2.3 billion reduction in Citi's FTC carry-forwards related to the deemed repatriation of undistributed earnings of non-U.S. subsidiaries."
Goldman Sachs	"The provision for taxes in 2017 reflected an **increase in Income tax expense of $4.40 billion representing the estimated impact of Tax Legislation** enacted on December 22, 2017. The $4.40 billion income tax expense includes the repatriation tax on undistributed earnings of foreign subsidiaries, the effects of the implementation of a territorial tax system and the remeasurement of U.S. deferred tax assets at lower enacted tax rates."
JP Morgan Chase	"On December 22, 2017, the Tax Cuts and Jobs Act ("TCJA") was signed into law. The Firm's results included **a $2.4 billion decrease to net income as a result of the enactment of the TCJA**."
Morgan Stanley	"Results for 2017 included an intermittent **net discrete tax provision of $968 million**, or $0.53 per diluted common share, primarily related to the impact of the Tax Cuts and Jobs Act ("Tax Act"), partially offset by net discrete tax benefits related to the remeasurement of reserves and related interest due to new information regarding the status of multi-year IRS tax examinations."
State Street Corporation	"The 2017 results include a **one-time estimated net impact of $270 million associated with the Tax Cuts and Jobs Act (TCJA).** This impact consisted of a one-time estimated tax expense of approximately $250 million and a one-time reduction of approximately $20 million in revenue."
Wells Fargo	"Accordingly, our income tax expense for 2017 **reflected $3.7 billion of net estimated tax benefits related to the Tax Act,** primarily as a result of re-measuring our deferred taxes for the federal tax rate reduction from 35% to 21%."

Sources: Banks' financial statements and annual Form 10-K reports.

[43] Table 3 indicates an aggregate impact of around 30bn USD, converted to euro using the foreign exchange rate at 31/12/2017 (i.e. 0.83319 EUR/USD).

5 Conclusions

The differences in EA and US G-SIBs' business models are reflected in their financial statements, leading to a consistent gap in profitability in favour of US banks. Differing macroeconomic and financial environments shape G-SIBs' business strategies on both sides of the Atlantic. The bulk of EA G-SIBs' profitability relates to traditional lending activities, while their US peers are more active in IB and trading activities, from which they generate more non-interest income. Dissimilarities between the banking systems suggest that they are not necessarily a perfect benchmark for each other, nor should US G-SIBs' strategies be interpreted as a recipe for financial performance to be followed by EA G-SIBs.

Notwithstanding this caveat, the paper identified the main drivers behind the profitability gap and investigated the reasons for their existence. After highlighting the main distinguishing features of the EA and US banking systems, this fact-finding exercise determined the various P&L items that contribute to the gap in profitability, examining each of them in depth to better understand the underlying reasons. For some drivers, the paper paves the way for further investigation, which would certainly bring additional clarity to this topic.

By focusing on profitability, this investigation does not provide a comprehensive analysis of the financial performance of EA and US G-SIBs. Profitability is only one of the multiple elements that ultimately help to define banks' performance. Aspects related to risk taking, business model sustainability and prudential regulation should also be considered for a complete assessment of banks' business strategies.

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Acknowledgements
We would like to thank Eva Gerl for her research assistance, Vlad Tomozei (European Central Bank) for his valuable insights, Martin Dadun (European Central Bank) and Aleksander Kraj (European Central Bank) for the multiple discussions, contributions and banking business knowledge shared from their extensive experience as direct line supervisors of EA G-SIBs, and Catherine Lejeune (Bundesbank) for her help with understanding the implications of macroeconomic and interest rates conditions. Helpful comments and suggestions from Mario Quagliariello, Klaus Düllmann, Frédéric Lardo, and Andreas Beyer are also acknowledged. We are fully responsible for any errors or omissions.
The views expressed in this paper are our own and do not necessarily reflect those of the ECB or the Eurosystem, or those of the people mentioned in these acknowledgements.

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PDF ISBN 978-92-899-6156-1, ISSN 1725-6534, doi:10.2866/51151, QB-AQ-23-018-EN-N