## Greece Banks

# From risk to growth: Eurobank/Alpha (Buy), Piraeus (Neutral), NBG (Not Rated)

Waleed Mohsin
+971(4)376-3575 |
waleed.mohsin@gs.com
Goldman Sachs International

Mikhail Butkov
+7(495)645-4073 |
mikhail.butkov@gs.com
OOO Goldman Sachs Bank

**Greek banks at a multi-year inflection point...**

We believe Greek banks are at a multi-year inflection point. Indeed, by FY23 we forecast: (1) ROTE trending towards average European levels, (2) NPEs converging to EU/CEEMEA levels, (3) the Texas ratio halving to c.30% from c.60% in FY21E amid the reduction in NPEs and build-up in capital/provisioning buffers, and (4) dividends back in discussion. Our assessment is supported by management commentary, albeit the pace of ROTE normalization and capital build-up may vary across banks. Moreover, our analysis of historical data in Turkey, Russia and Italy shows that successful restoration of capital buffers marks a major inflection point in valuations.

**...as we move from risk to growth...**

We believe Greek banks are on a path to strong ROTE inflection after c.15 years of loan book clean-up. We forecast the NPE ratio of Greek banks to reach single-digit territory in FY22, and beyond the period of de-risking, we expect Greek banks to transition towards balance sheet growth. On our estimates, banking sector ROTE is set to improve from an average of 5% in FY21E to 8% in FY23E, underpinned by: (1) organic cost of risk reduction from 90bps in FY21E to a 60bps average over FY22-24E, (2) an inflection in performing loan growth from flat over FY16-21E to a CAGR of 6.5% (1.4x nominal GDP) over FY21-24E, and (3) positive operating jaws of >500bp over FY21-24E due to cost control. Moreover, higher interest rates should be NIM accretive, with every 25bp increase in bond yields adding 2% to the bottom line, which should partially offset the negative (yet manageable) MTM impact on capital.

# Table of Contents

### …with medium-term ROTE generation potential yet to be priced in

Our investment thesis for Greek banks is predicated on: (1) strong ROTE recovery potential and robust capital build-up over FY21-23E leading to excess capital distribution, (2) cost of equity normalization, and (3) cheap valuations within a CEEMEA context. The risk perception of Greek banks by the market remains elevated, with market-implied COE at 14.5% (vs. average EU levels of 10-11%), and we believe full credit for the deleveraging progress of Greek banks is yet to be reflected by the market. We are on average 4% above FY23E consensus EPS, mainly on account of higher volume growth and lower cost of risk expectations.

### 3Cs: Credit quality, Capital Adequacy, Capital Generation in focus for stock-picking

We view positively the progress made by Greek banks on NPE resolution, build-up of provisioning reserves, and restoration of capital buffers. Given the concentrated nature of the banking sector and relatively similar loan exposures, we differentiate amongst banks based on the following: (1) progress on NPE resolution, (2) core capital buffers, and (3) ROTE generation. We use a capital-adjusted ROTE/COE approach to capture differences in capital buffers, and we use FY23E as our valuation year. We upgrade Eurobank to Buy (from Neutral) as we see the bank benefiting from solid progress on NPE resolution and prospects for robust capital generation. We forecast FY23 ROTE at c.9% from c.6% in FY21E, and see CET-1 reaching 13.7%. At 0.6x FY23E P/TBV, we see the bank's valuation as attractive relative to its FY23E ROTE generation and capital position. We reiterate our Buy on Alpha, which trades at 0.5x FY23E P/TBV, screening attractively in the context of our FY23 ROTE/CET-1 forecasts of 8.0% and 13.3% respectively. We remain Neutral on Piraeus: while we view positively the company's progress on NPE resolution and capital build-up, we note the bank lags peers on these metrics and screens as less attractive vs. peers on valuation grounds. We remain Not Rated on NBG.

With this report, Waleed Mohsin assumes primary coverage of Alpha Services and Holdings, Eurobank Holdings, National Bank of Greece, and Piraeus Financial Holdings. These four stocks move to our MENA, Turkey, South Africa and Greece Financials coverage.

**Exhibit 1: Summary of Ratings and Price Targets (priced as of Feb 11, 2022 close)**

| Ticker | Company name | Rating | Market cap | ADTV, 3m | Share Price | Target Price (new) | Target Price (old) | U/D |
|---|---|---|---|---|---|---|---|---|
| | | | EUR bn | EURmn | EUR | EUR | EUR | % |
| ACBr.AT | Alpha Services and Holdings | Buy | 2,207 | 10.9 | 1.43 | 1.68 | 1.12 | 18% |
| EURBr.AT | Eurobank Holdings | Buy | 4,243 | 5.5 | 1.14 | 1.40 | 0.65 | 22% |
| NBGr.AT | National Bank of Greece | Not Rated | 3,429 | 7.1 | 3.75 | | | - |
| BOPr.AT | Piraeus Financial Holdings | Neutral | 2,076 | 3.8 | 1.66 | 1.70 | 1.47 | 2% |

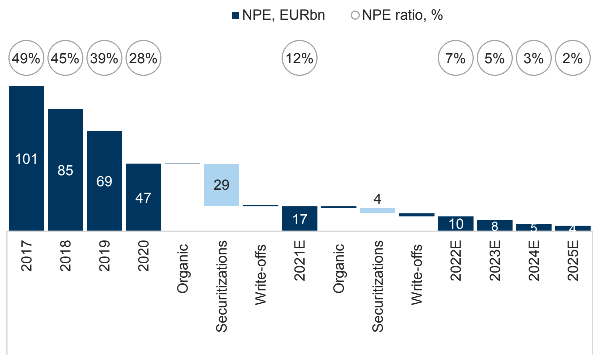
Source: Factset, Goldman Sachs Global Investment Research

*The authors of this report would like to thank Lyudmila Melnikova for her significant contribution to this report.*

*Prices in this report are based on the market close of February 11, 2022, unless otherwise stated.*

# The story in charts: Greek Banks at a multi-year inflection point

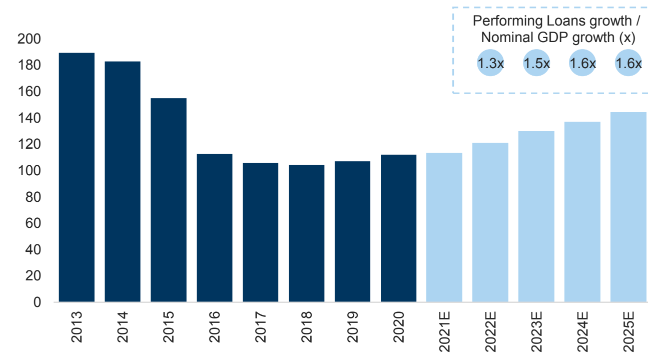
**Exhibit 2: Over the last three years, Greek banks have completed c.95% of planned NPE securitizations by end FY21, with the rest to be completed during FY22. We forecast the NPE ratio to decline to 12%/7%/5% in FY21/22/23 from 28% in FY20**




Source: Company data, Goldman Sachs Global Investment Research

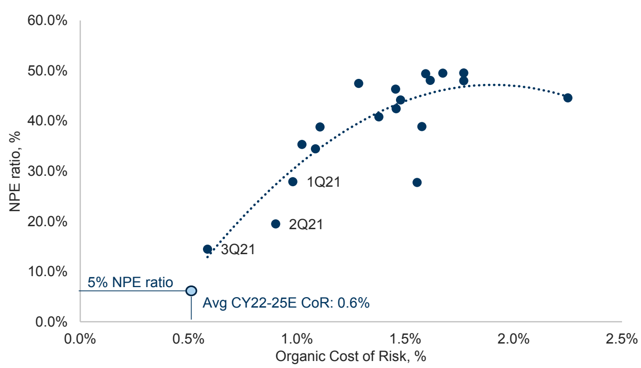
**Exhibit 3: We forecast the performing loan book to grow at a CAGR of 6.5% over FY22-24E, supported by tailwinds from an improving macro backdrop and the RRF support plan**

Greek banks' total performing loans, bn EUR



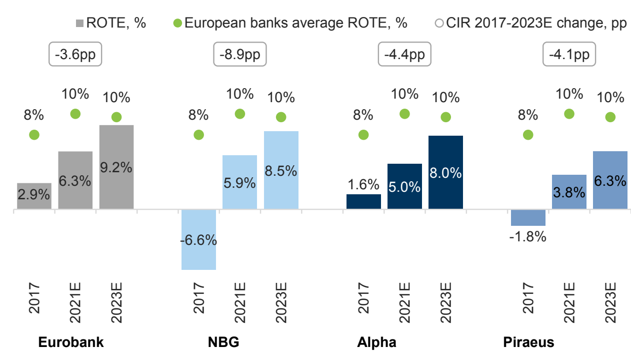

Source: Company data, European Commission, IMF, Goldman Sachs Global Investment Research

**Exhibit 4: We forecast cost of risk to normalize at 60-70bp, underpinned by a reduction in the stock of NPEs...**



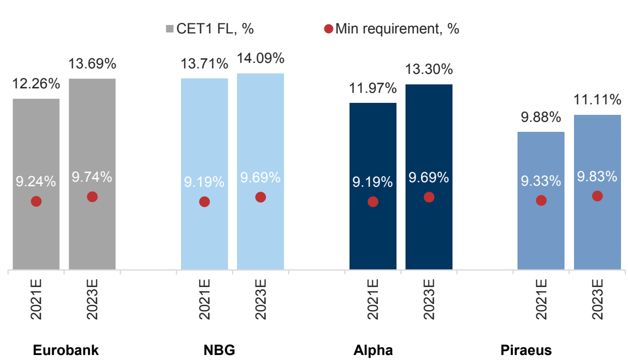

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 5: ...which, coupled with positive operating jaws, should move Greek banks' ROTE closer to European banking sector levels**




Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 6: Internal capital generation should drive restoration of capital buffers, with potential for dividend discussions from FY23E**




Source: Goldman Sachs Global Investment Research

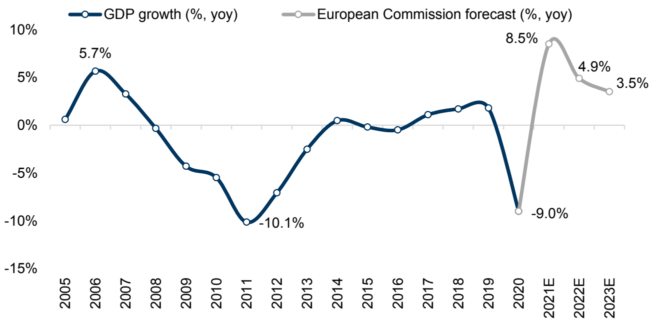
**Exhibit 7: We prefer a selective approach based on valuation and 3Cs: Credit quality, Capital buffers and Capital generation; Eurobank up to Buy, reiterate Buy on Alpha**

| Capital adequacy & Asset Quality (2023E) | Alpha | NBG | Eurobank | Piraeus |
|---|---|---|---|---|
| Gross NPE ratio, % | 4.8% | 4.5% | 4.3% | 5.3% |
| CET1 ratio, % | 13.3% | 14.1% | 13.7% | 11.1% |
| NPE coverage ratio, % | 69% | 110% | 78% | 41% |
| Common Equity Tier 1 / Net NPE ratio | 8.2x | -34x | 15x | 2.8x |
| Texas ratio, % | 31% | 23% | 25% | 48% |
| **Organic capital generation** | **Alpha** | **NBG** | **Eurobank** | **Piraeus** |
| Performing loans 2022-24E CAGR | 6.6% | 6.8% | 6.3% | 5.9% |
| Fee income 2022-24E CAGR | 5.3% | 6.0% | 7.2% | 5.4% |
| C/R 2022-24E average | 49.5% | 48.9% | 44.2% | 48.6% |
| Δ C/I 2022-24E | -10.6pp | -4.8pp | -4.5pp | -4.5pp |
| Cost of Risk 2022-24E | 0.6% | 0.5% | 0.5% | 0.9% |
| ROTE, 2023E | 8.0% | 8.5% | 9.2% | 6.3% |
| **Valuation** | **Alpha** | **NBG** | **Eurobank** | **Piraeus** |
| COE, % | 12% (vs. 10.8% for European banks) | | | |
| Target price, EUR | €1.68 | - | €1.40 | €1.70 |
| Rating | Buy | Not Rated | Buy | Neutral |
| Implied P/TBV | 0.6x | - | 0.8x | 0.3x |

Source: Goldman Sachs Global Investment Research

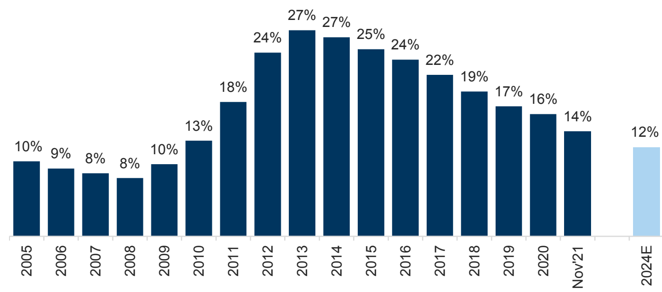
# An improving macro backdrop, a strong tailwind for the banking sector

**Exhibit 8: Following strong growth in 2021 (+8.5% GDP growth), the European Commission expects the Greek economy to expand by 4.9%/3.5% in 2022/23**
GDP growth vs. European Commission forecast (10/02/2022)



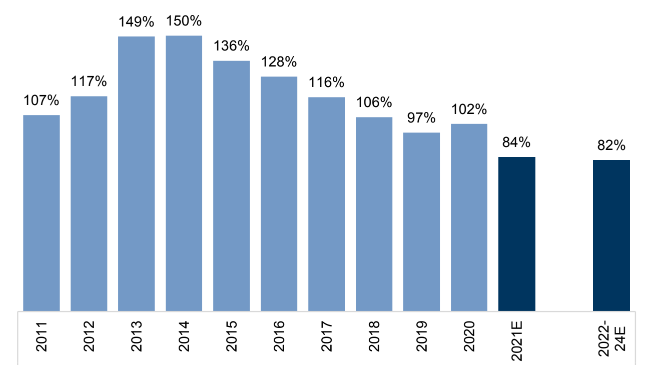

Source: Bank of Greece, European Commission

**Exhibit 9: Unemployment rate in Greece decreased to 14% in Nov'21 and the IMF forecasts 12% in 2024**
Unemployment rate in Greece, %



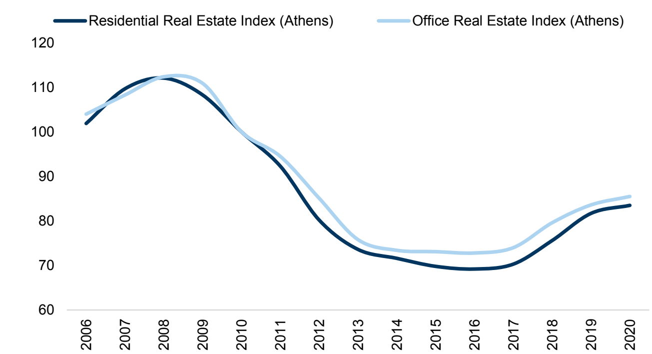

Source: Bank of Greece, IMF

**Exhibit 10: The ratio of gross debt to GDP in Greece has reduced to a decade low of 84%, down from highs of c.150%**
Debt to GDP in Greece



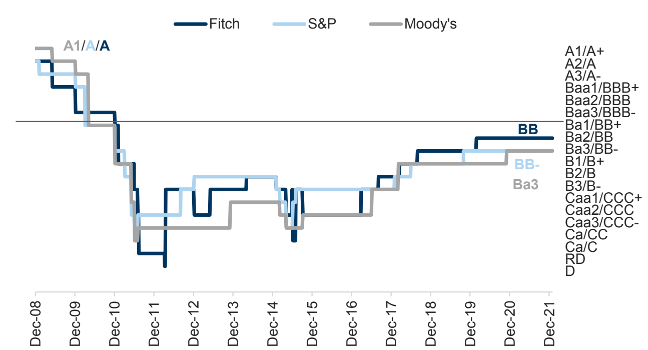

Source: Bank of Greece, Goldman Sachs Global Investment Research

**Exhibit 11: Real estate prices in Greece have exhibited a gradual recovery since 2018**
Real Estate Price Index in Greece: Residential and Office



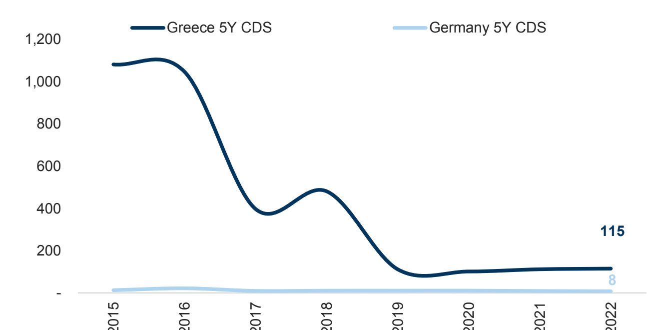

Source: Bank of Greece

**Exhibit 12: Greek banks have seen multiple upgrades by rating agencies over the last 3 years; Greece remains 2/3/3 notches below IG for Fitch/S&P/Moody's**




Source: Bloomberg, Fitch Ratings, S&P Global Ratings, Moody's

**Exhibit 13: 5-year CDS spreads for Greece have tightened meaningfully since 2015, reflecting strong improvement in risk perception**
Sovereign 5Y CDS Spread price




Source: Bloomberg

# Greek banks: From risk to growth

**In our view, Greek banks are on a path to strong ROTE inflection after c.15 years of loan book clean-up. We forecast the NPE ratio of Greek banks to reach single-digit territory in FY22, and beyond the period of de-risking, we expect Greek banks to transition towards balance sheet growth. We forecast ROTE to improve from an average of 5% in FY21E to 8% in FY23E, underpinned by: (1) organic cost of risk reduction from 90bps in FY21E to a 60bps average over FY22-24E, (2) inflection in performing loan growth from flat over FY16-21E to 6.5% (1.4x nominal GDP) over FY21-24E and (3) positive operating jaws of >500bp over FY21-24E due to cost control. Organic capital generation should, on our forecasts, translate into capital build-up (with an average CET1 ratio of 13% in FY23E) and scope for dividends discussions after >10 years. We forecast the Texas ratio for Greek banks to reduce to c.30% in FY23E from 60%/100% in FY21E/20. Our estimates imply NBG/Eurobank reaching mid-single-digit NPE ratios in FY22, followed by Alpha/Piraeus in FY23.**

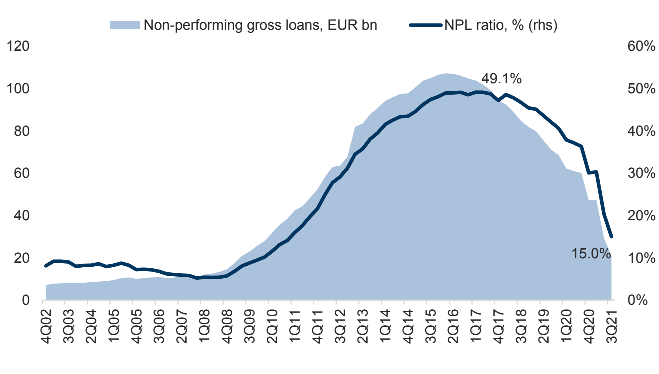


## From risk...: Lower cost of risk through the cycle due to deleveraging

Over the past five years, Greek banks were able to reduce the NPE balance by 85%, bringing down the NPE ratio from a peak of 49% in FY17 to 12% at the end of FY21E. Based on company announcements, we calculate that Greek banks had securitized EUR29bn of loans in FY21, and with a remaining EUR4bn of securitization projects in the pipeline (due to be concluded by the end of FY22), the NPE ratio for Greek banks should reach 7% and move towards 5%/3% in FY23/24. Following deleveraging, we expect to see a normalization of organic cost of risk for Greek banks (Exhibit 17): we model organic cost of risk to reduce from 0.9% to 0.6% in FY22-24. On our estimates, NBG/Eurobank will reach a 5-6% NPE ratio as early as FY22, with Alpha/Piraeus following in FY23.

**Exhibit 14: Greek banks continued with deleveraging plans in FY21...**

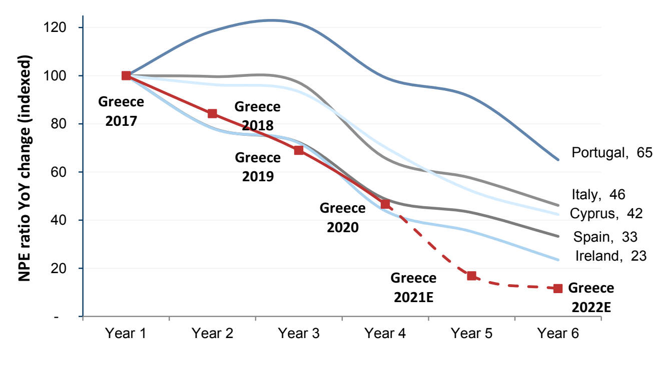
Total NPL outstanding amount and NPL ratio in Greece




Source: Bank of Greece

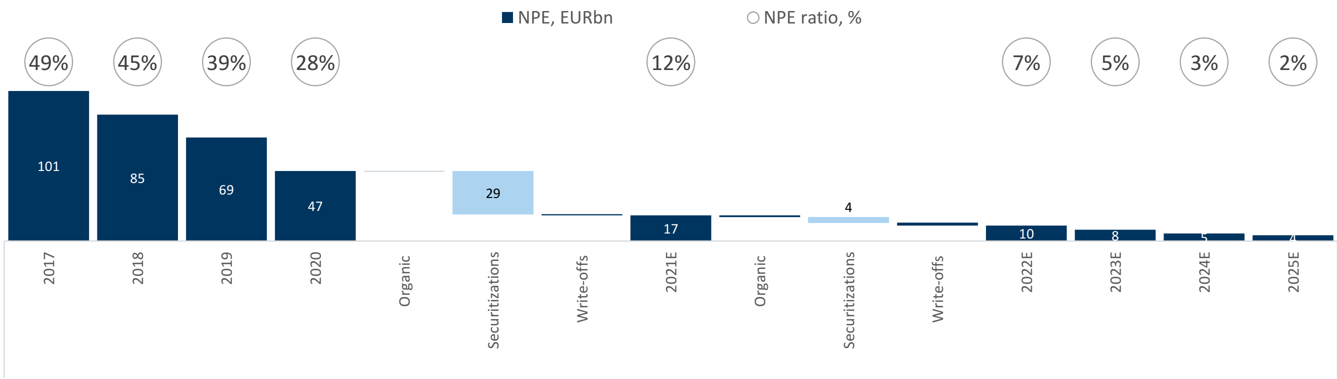
**Exhibit 15: ...reducing the stock of NPEs by 85% (on our estimates) since FY17**

100 = Year 1; for Greece, Year 1 = 2017, for all other = 2014



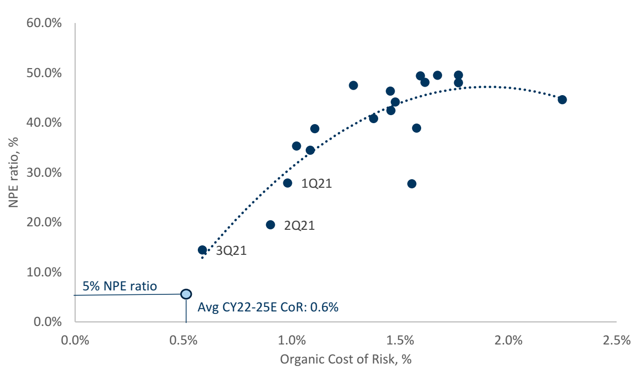

Source: Company data, European Banking Authority, Goldman Sachs Global Investment Research

**Exhibit 16: Based on company announcements, the dominant part of planned securitizations should be completed by FY22 (c.95% of plans already completed by FY21). We forecast the average NPE ratio at 12%/7%/5% in FY21-23**



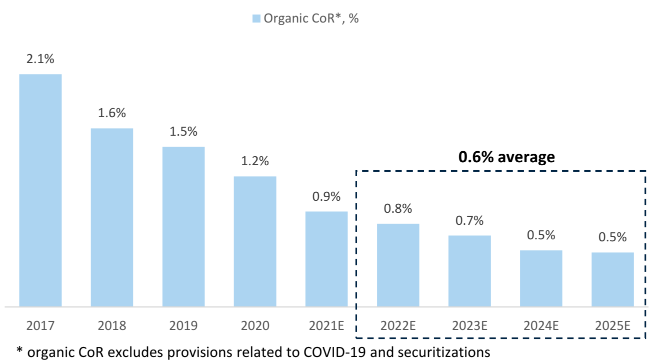

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 17: Following deleveraging, we forecast a normalization in organic cost of risk...**
NPE ratio vs. Cost of Risk in FY17-21E (dark blue) and GS forecast for FY22-25E



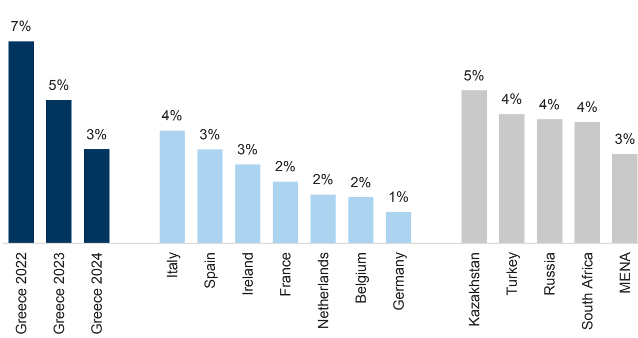

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 18: ... approaching c.0.6% on average in FY22-25E**
Organic cost of risk, %



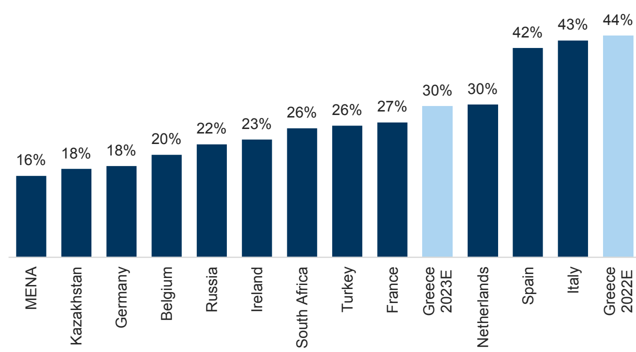

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 19: Our forecasts imply Greek banks converging with the CEEMEA NPE ratio by the end of FY23 and on track to converge to European levels by the end of FY24**
Gross NPE ratio, %




Source: ECB, Company data, Goldman Sachs Global Investment Research

**Exhibit 20: Based on our estimates, Greek banks will be close to the current Texas ratio for Italy and Spain, and on track to converge to European/CEEMEA average levels, by the end of FY23**
Texas ratio, FY22-23E for Greece; 3Q21 for European banks; FY21E for CEEMEA banks




Source: ECB, Company data, Goldman Sachs Global Investment Research

### ... to growth: Dividend discussions are back on the table after >10 years

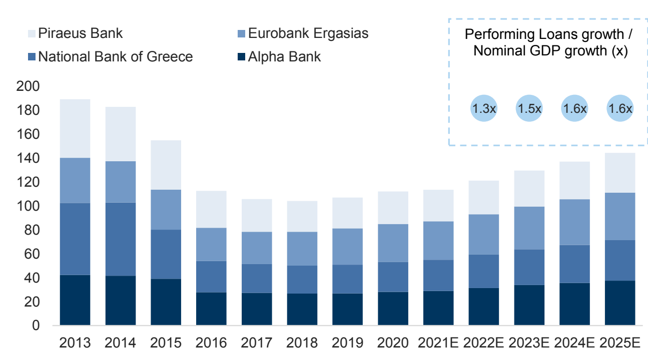
After more than a decade of deleveraging, we expect Greek banks to enter the growth phase thanks to improved capital buffers, general macroeconomic recovery and stimulus packages from the EU (the European Commission forecasts average GDP growth of 4% in 2022-23). The Recovery and Resilience stimulus plan (Greece 2.0 programme) is expected to mobilize EUR60bn of investments into the economy (over 2021-26), of which roughly half will be provided as funding from the EU (in the form of grants and loans to the amount of EUR18bn/13bn) and the remaining part will be financed by banks in the form of credit (which, according to Alpha Bank's estimates, can cover more than 30% of planned investments) and by equity investors. Furthermore, inflows of funds into the economy should translate into second-round positive "multiplier effects".

We model a 6.5% performing loans CAGR in FY21-24 (on 1.4x nominal GDP) and mid-single-digit fee income growth over the same period (thanks to the rebound in transactional and lending-driven non-interest income). We note that absolute revenue growth will likely be muted in FY21-24E (our forecast implies flattish growth) amid exits of interest-bearing NPEs; yet the quality of new revenue streams will be higher as they are generated on performing exposures. A focus on cost optimization (in particular inefficient branches/FTEs) should result in a compression of Cost/Income ratios and positive operating leverage effects.

The combination of improving operational trends and lower cost of risk should translate into a recovery in ROTE, with a trend towards high-single-digit levels (converging to European average levels in the long term). For three banks in our coverage (Alpha, Eurobank, NBG), we model CET1 capital adequacy levels in excess of 13% in FY23, implying a comfortable capital buffer over the minimum levels. This points to the possibility of discussion of extra capital allocation to shareholders.

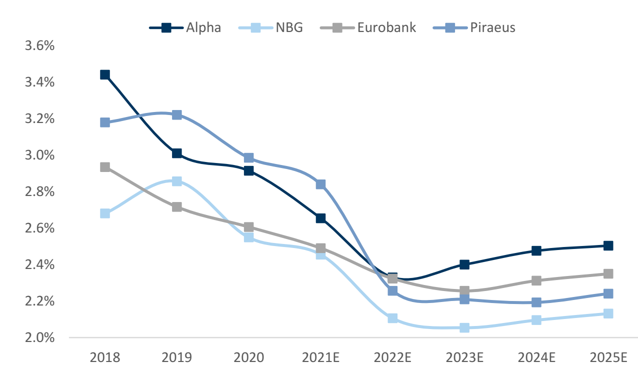


**Exhibit 21: NPE clean-up + improving macro backdrop = growth in performing loans...**
Performing loans, EUR bn



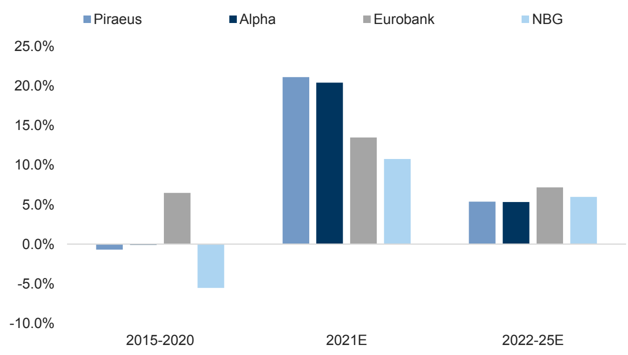

Source: Company data, European Commission, IMF, Goldman Sachs Global Investment Research

**Exhibit 22: ... however, NII growth will be muted (on our forecasts) amid exits of non-performing exposures which generate higher interest yields (the absence of which will weigh on NIM)**
NIM progression for Greek banks, %



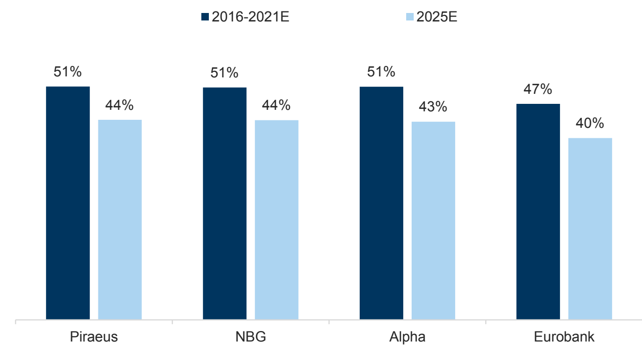

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 23: We forecast >5% fee income growth on average over FY22-25, driven by higher business volumes**
Fee income growth, %



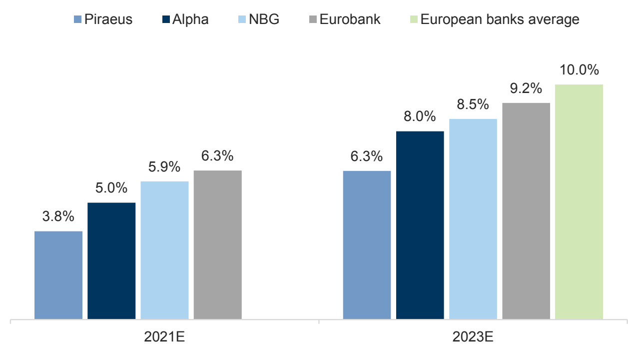

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 24: Positive operating jaws to be underpinned by medium-term cost rationalization programs**
Cost-to-income ratio, %



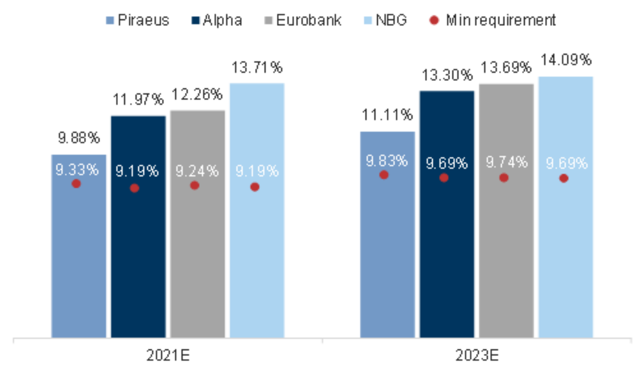

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 25: Positive underlying profitability should underpin a recovery towards mid- to high-single-digit ROTEs**
Adjusted ROTE, %




Source: Goldman Sachs Global Investment Research

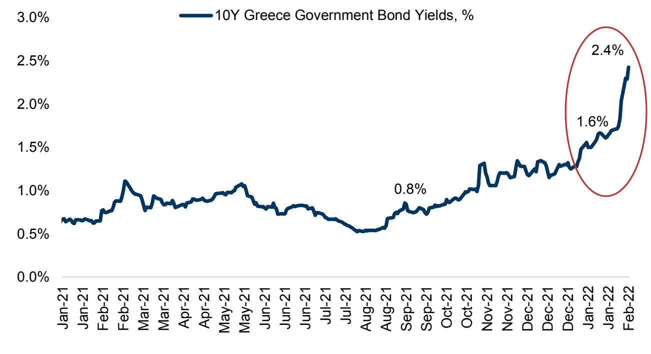
**Exhibit 26: Internal capital generation should support restoration of capital buffers, with potential dividend discussions back on the table**
CET1 FL ratio and minimum level, %




Source: Company data, Goldman Sachs Global Investment Research

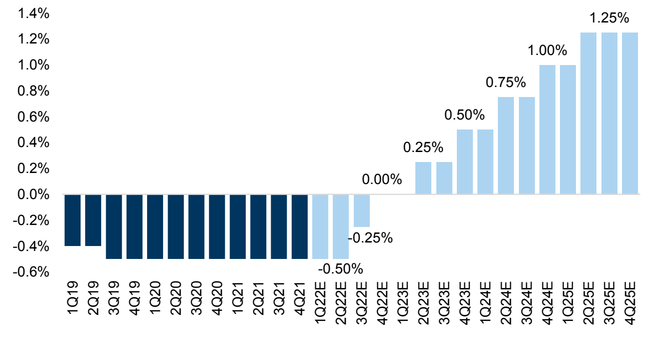
## Higher interest rates: (1) Accretive for NIM (25bps = +2% to earnings), (2) existing capital buffers should cover the impact of MTM revaluation of bond portfolios

**Exhibit 27: Greek government bond yields have spiked over the last month, reflecting the more hawkish ECB tone**
10Y Government Bond Yield of Greece



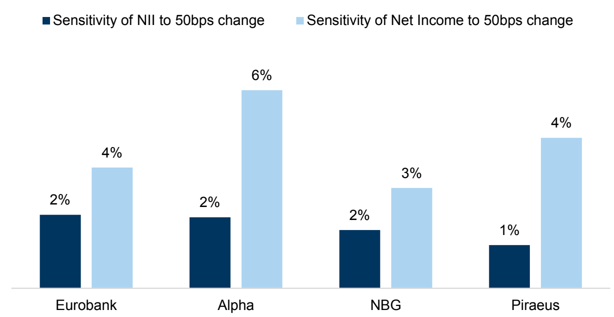

Source: Bloomberg

**Exhibit 28: GS economists expect two rate hikes in 2022 (each 25bps) and another two hikes in 2023 (each 25bps)**
Policy rate outlook for Euro Area (GSe)



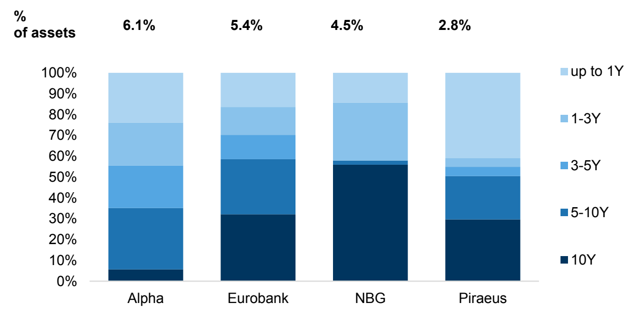

Source: Goldman Sachs Global Investment Research

**Exhibit 29: On our sensitivity analysis, NII should see a 2% average benefit for each 100bps change in rates, translating into an 4% avg benefit for Net Income of Greek banks**




Source: Company data, Goldman Sachs Global Investment Research

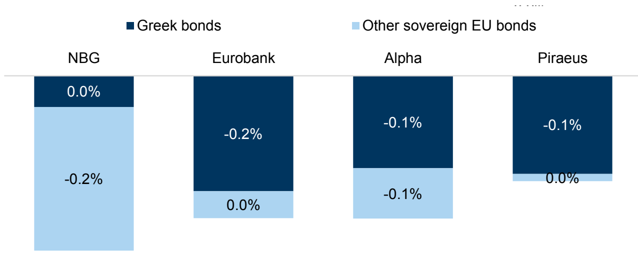
**Exhibit 30: NBG and Eurobank have the highest exposure to longer-duration bonds; overall, bonds comprise 3%-6% of banks' assets**
Government Greek Bonds at FVOCI, %




Source: Company data, European Banking Authority

**Exhibit 31: Impact from the repricing of bonds should be manageable for banks given existing capital buffers; we estimate an average impact of 10bps from revaluation of GGBs and up to 20bps if the whole portfolio (including other EU sovereign bonds) is repriced (for 50bps move in rates)**

Impact on CET1 from 50bps change in yields (on our sensitivity analysis); hedging policies are not accounted for in the analysis

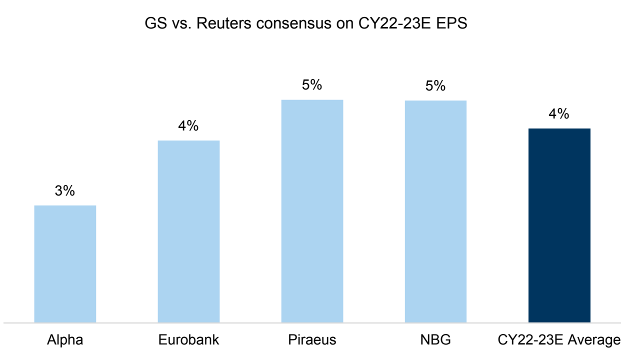



Source: Bloomberg, European Banking Authority, Goldman Sachs Global Investment Research

## Where are we versus consensus? 4% above Reuters on FY22-23E EPS

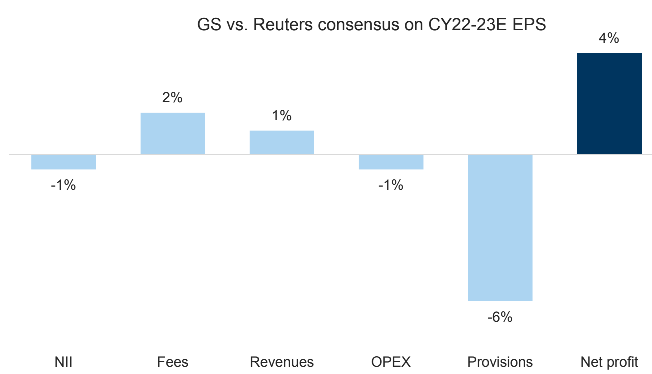
Our above-consensus forecast is mainly attributable to lower provision assumptions (6% lower vs. Reuters) as a result of our detailed analysis of remaining NPE balances, as well as a slightly stronger outlook for fee income and opex.

**Exhibit 32: We are 4% above Reuters consensus on CY22-23E earnings**




Source: Thomson Reuters Eikon, Goldman Sachs Global Investment Research

**Exhibit 33: The key components of the difference vs. Reuters are (1) provisions, (2) fee income, (3) operating expenses**



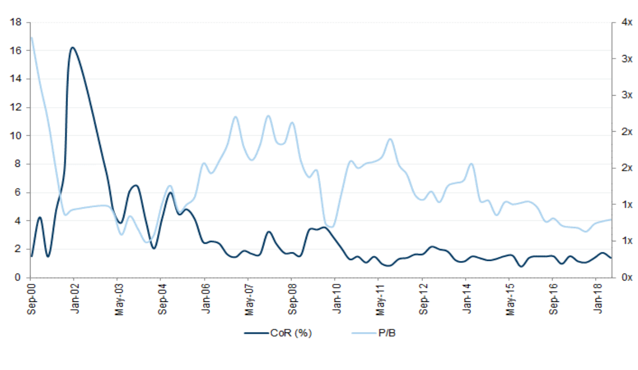

Source: Thomson Reuters Eikon, Goldman Sachs Global Investment Research

# Valuation: 3Cs (Credit quality, Capital Adequacy, Capital Generation to drive rerating)

**Greek banks are up c.30% over the last 6 months, reflecting progress on deleveraging, general operational performance and macroeconomic recovery. The risk perception of Greek banks remains elevated, however, with the market-implied COE at 14.5% (vs. average European levels of 10-11%), and we believe full credit for the deleveraging progress of Greek banks is yet to be reflected by the market. Our investment thesis is predicated on: (1) strong ROTE recovery potential and robust capital build-up prospects over FY21-23E (our analysis of historical data in EM/DM suggests that restoration of capital buffers marks a major inflection point in valuations), (2) undemanding valuations of Greek banks within a CEEMEA context (both on P/TBV and P/E), and (3) cost of equity normalization (to a target of 12% used in our valuations as NPE balances converge to EU/CEEMEA levels). We differentiate among stocks based on our 3C criteria: (i) credit quality, (ii) core capital adequacy, and (iii) capital generation. We use a capital-adjusted 2023E ROTE/COE model to capture companies' individual capacity for capital distributions. Based on valuation and company-specific exposures to these criteria, we are Buy-rated on Eurobank and Alpha, and Neutral on Piraeus. We are Not Rated on NBG. We are on average 4% above Reuters consensus EPS for CY22-23, mainly on higher business volumes and lower provisions in our assumptions.**

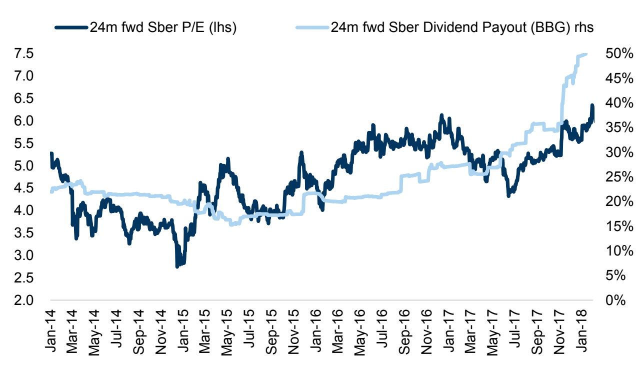
### (1) Restoration of capital buffers marks an inflection point for valuations: case studies from Turkey, Russia, Italy

**Exhibit 34: In Turkey, improved asset quality and reduction in cost of risk translated into an inflection in P/B ratios for Turkish banks in 2000-2005**
Cost of Risk vs. P/B



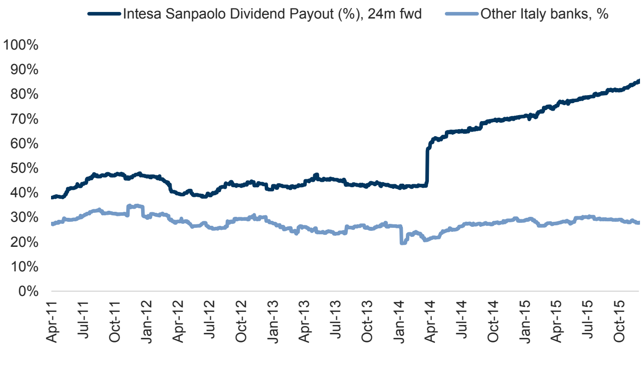

Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 35: In Russia, the build-up of capital adequacy levels and reinstatement of dividends for Sber in 2016-17 was followed by a rerating of the stock**



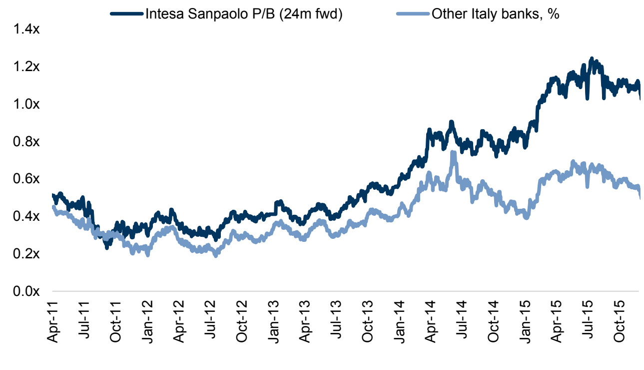

Source: Bloomberg

**Exhibit 36: In Italy, consensus expectations of a higher dividend payout for Intesa Sanpaolo...**




Source: Bloomberg

**Exhibit 37: ... triggered a subsequent rerating and outperformance vs. other banks in Italy**

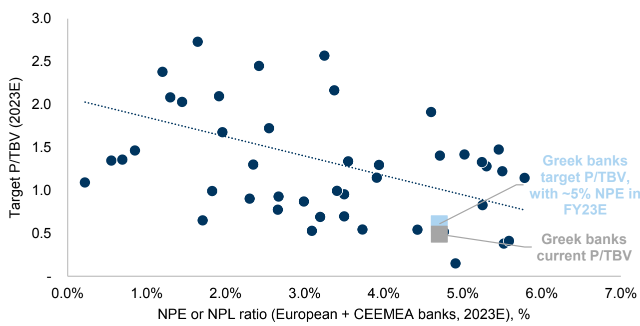



Source: Bloomberg

## (2) Greek banks' valuations screen as undemanding in a CEEMEA/GEM context

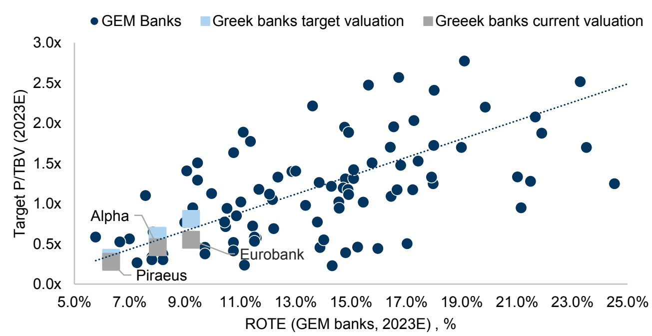
**Exhibit 38: Greek banks trade at 0.5x FY23E P/TBV, which on a NPE-adjusted basis represents a significant discount relative to European/CEEMEA banks...**

Greek banks' P/TBV vs. NPE or NPL ratio, %




Source: FactSet, Goldman Sachs Global Investment Research

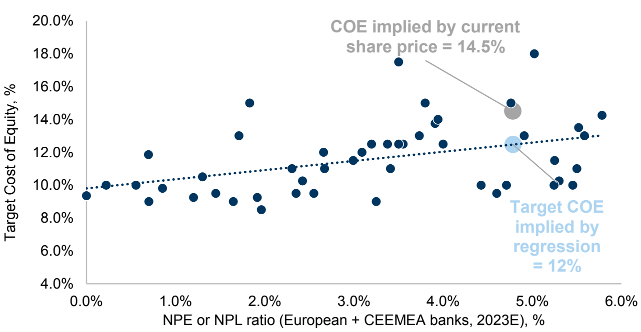
**Exhibit 39: ... with a similar result observed on a return-adjusted basis**




Source: FactSet, Goldman Sachs Global Investment Research

## (3) We expect the COE of Greek banks to converge to a more normalized level of 12% post deleveraging (from 14.5% implied by the market currently)

**Exhibit 40: Regression analysis of COE vs. NPE ratio for CEEMEA and EU banks in GS coverage**




Source: Company data, Goldman Sachs Global Investment Research

**Exhibit 41: Analysis of European banks' COE vs. 10Y bond yield levels also puts Greece COE at c.12%**

| Country | Target COE*, % | 10Y bond yield, % | Rating (S&P / Fitch / Moody's) |
|---|---|---|---|
| **Greece** | | **2.4%** | **BB- / BB / B1a3** |
| France | 12.2% | 0.7% | BBB/A-2 / BBB / Baa3 |
| Sweden | 11.9% | 0.7% | AAA / AAA / Aaa |
| Italy | 11.5% | 1.8% | AA / AA / Aa2 |
| Belgium | 10.7% | 0.7% | AA / AA- / Aa3 |
| Netherlands | 10.7% | 0.4% | AAA / AAA / Aaa |
| UK | 10.5% | 1.4% | AA/A-1+ / AA- / Aa3 |
| Spain | 9.9% | 1.1% | A / A- / Baa1 |
| Germany | 8.8% | 0.2% | AAA / AAA / Aaa |
| **Europe average** | **10.8%** | **0.9%** | |
| Greece vs. Europe yield spread | | 1.6% | |
| **Greek banks COE** | **12.3%** | | |

* weighted average by market cap for each country

Source: FactSet, Goldman Sachs Global Investment Research

### Differentiate between stocks based on 3C: Credit quality, Capital adequacy, Capital generation; Eurobank/Alpha are Buys, Piraeus is Neutral

Given the concentrated market structure, with four banks controlling a 95% market share, we see limited differences across loan exposures for Greek banks. We expect all four banks to benefit broadly equally on the loan and fee income growth side from macro recovery. In addition to valuation, we therefore differentiate amongst the banks based on three main criteria (3Cs): (1) Credit quality (progress on NPE resolution and cost of risk), (2) Core capital buffers (CET-1), and (3) Capital generation (ROTE). We note that banks with stronger credit quality and capital buffers are also better positioned to generate higher ROTE (amid a lower cost of risk). See our summary of key differentiating points in Exhibit 42.

NBG (Not Rated) and Eurobank (up to Buy) screen the strongest on credit quality metrics and core capital buffers (FY23E CET1 ratio of c.14% for both). We expect these two companies to be the closest to European ROTE levels in FY23E (8.5%/9% vs. EU avg of 10-11%). Alpha (reiterate Buy) is on track to deliver the strongest momentum on ROTE recovery (from 5% in FY21E to 8% in FY23E thanks to cost optimization initiatives), with a comfortable level of capital buffers too (13% CET1 ratio in FY23E). While we view positively the progress made by Piraeus on NPE resolution and capital build-up, we note the bank lags peers on these metrics, and we maintain our Neutral rating on the stock.

**Exhibit 42: How we differentiate between banks**

| Balance sheet health (Capital adequacy & Asset Quality) | Alpha | NBG | Eurobank | Piraeus | Comment |
|---|---|---|---|---|---|
| Gross NPE ratio 2021E | 12.8% | 11.5% | 7.5% | 14.4% | We forecast four Greek banks in our coverage to look similarly "low" on the absolute Gross NPE ratio by 2023E… |
| Gross NPE ratio 2023E | 4.8% | 4.5% | 4.3% | 5.3% | |
| **Capital Adequacy** | | | | | |
| CET1 ratio, 2021E | 12.0% | 13.7% | 12.3% | 9.9% | … but once taking into account the **capital adequacy levels** … |
| CET1 ratio, 2023E | 13.3% | 14.1% | 13.7% | 11.1% | |
| **Coverage ratios** | | | | | |
| NPE coverage ratio 2021E, % | 65% | 71% | 70% | 38% | |
| NPE coverage ratio 2023E, % | 69% | 110% | 78% | 41% | |
| Common Equity Tier 1 / Net NPE ratio, 2021E % | 2.4x | 4.7x | 5.4x | 0.9x | … and **NPE coverage ratios -** the balance sheet of **NBG & Eurobank** would screen the strongest on our forecasts |
| Common Equity Tier 1 / Net NPE ratio, 2023E % | 8.2x | -34x | 15x | 2.8x | |
| Texas ratio, 2021E | 67% | 48% | 43% | 107% | |
| Texas ratio, 2023E | 31% | 23% | 25% | 48% | |
| **Organic capital generation (ROTE)** | **Alpha** | **NBG** | **Eurobank** | **Piraeus** | **Comment** |
| Performing loans CAGR 2022-24E CAGR | 6.6% | 6.8% | 6.3% | 5.9% | We expect broadly similar performing loans growth of Greek banks in 2022-24E with unchanged balance of market shares |
| Fee income CAGR 2022-24E CAGR | 5.3% | 6.0% | 7.2% | 5.4% | We model slightly stronger growth of **fee incomes** for **Eurobank** given large exposure to pro-cyclical AM/IB industries |
| Cost/Income ratio, 2022-24E average | 49.5% | 48.9% | 44.2% | 48.6% | **Eurobank C/I ratio** screens stronger vs. peers given a leaner cost base at the start |
| Δ C/I 2022-24E | -10.6pp | -4.8pp | -4.5pp | -4.5pp | **Alpha** targets to reach industry-average levels of C/I ratio by 2024E through the double-effort on **cost optimization** |
| Cost of Risk 2022-24E | 0.6% | 0.5% | 0.5% | 0.9% | **Cost of Risk** for **NBG/Eurobank** is the lowest given stronger balance sheet which largely explains their relatively higher **ROTE for 2023E** |
| ROTE, 2023E | 8.0% | 8.5% | 9.2% | 6.3% | |

Source: Goldman Sachs Global Investment Research

**We use a capital-adjusted ROTE/COE approach** to better capture differences in capital buffers, and we move to a single valuation year of FY23E (vs. an average of FY21-24E previously). The two key parameters calibrating our model are target COE and target CET1 ratio:

- **Target COE of 12%:** We previously used a Cost of Equity of 14%, but reflecting the progress on deleveraging, we now reduce this to 12%. We cross-check our new COE target with (1) regression analysis of COE vs. NPE for European/CEEMEA banks (Exhibit 40), and (2) analysis of sovereign bond spreads between Greece and the average level for European countries (Exhibit 41).
- **Target CET1 ratio of 13%:** In line with management targets for minimum capital adequacy to consider dividends.

The magnitude of target price changes for the three rated stocks is explained by two major factors: (1) the reduction of our target COE to 12% and (2) estimate changes which are mostly driven by our updated forecasts for cost of risk (based on company-specific progress on deleveraging) and higher business volumes (for all companies). See the summary of our estimates in Exhibit 45.

**Exhibit 43: We are Buy-rated on Eurobank and Alpha Bank, and Neutral on Piraeus**

| ROTE/COE Capital-adjusted valuation 2023E | Unit | Eurobank | Alpha | Piraeus |
|---|---|---|---|---|
| **CET1 Ratio 2023** | % | **13.7%** | **13.3%** | **11.1%** |
| Net NPL / RWA 2023 | % | -0.9% | -1.6% | 0.0% |
| Minimum CET1 ratio 2023 | % | 11.0% | 11.0% | 11.0% |
| **Target Capital ratio** | % | **13.0%** | **13.0%** | **13.0%** |
| **Excess capital per share 2023** | EUR | **0.08** | **0.05** | **-0.49** |
| **Avg TBVPS 2023 (capital-adjusted)** | EUR | **1.57** | **2.66** | **5.53** |
| **ROTE 2023 (capital-adjusted)** | % | **10.4%** | **8.1%** | **5.9%** |
| COE, % | % | 12.0% | 12.0% | 12.0% |
| Growth, % | % | 2.0% | 2.0% | 2.0% |
| **Target P/B multiple** | x | 0.8x | 0.6x | 0.4x |
| **Fair value** | EUR | **1.31** | **1.64** | **2.18** |
| Fair value + excess capital | EUR | 1.40 | 1.68 | 1.70 |
| Time adjustment factor | x | 0.00 | 0.00 | 0.00 |
| **Price Target** | EUR | **1.40** | **1.68** | **1.70** |
| **Old Price target** | EUR | **0.65** | **1.12** | **1.47** |
| Current price | EUR | 1.14 | 1.43 | 1.66 |
| **Upside to PT** | % | **22%** | **18%** | **2%** |
| **Rating** | | **Buy** | **Buy** | **Neutral** |
| Current P/E 2023E | x | 6.9x | 6.6x | 5.1x |
| Target P/E 2023E (implied) | x | 8.6x | 7.8x | 5.2x |
| Current P/TBV 2023E | x | 0.6x | 0.5x | 0.3x |
| Target P/TBV 2023E (implied) | x | 0.8x | 0.6x | 0.3x |

Source: Factset, Goldman Sachs Global Investment Research

**Exhibit 44: Key risks**

| Company name | Rating | Key risks |
|---|---|---|
| Alpha Bank | Buy | Key downside risks to our view and price target include: (1) weaker-than-expected macro backdrop, (2) delays in NPE resolution, (3) regulatory changes, (4) competitive pressures impacting pricing and volumes, (5) meaningful increase in risk perception impacting cost of equity and valuation, (6) lower-than-assumed scope for cost savings. |
| Eurobank Ergasias | Buy | Key downside risks to our view and price target include: (1) weaker-than-expected macro backdrop, (2) unfavorable regulatory changes, (3) competitive pressures impacting pricing and volumes, (4) lower-than-expected performing loan portfolio growth; (5) meaningful increase in risk perception impacting cost of equity and valuation, (6) negative capital surprises. |
| Piraeus Bank | Neutral | Key upside/downside risks to our view and price target include: (1) stronger/weaker-than-expected macro backdrop, (2) faster/delayed NPE resolutions, (3) regulatory changes, (4) market share gains/competitive pressures impacting pricing and volumes, (5) meaningful improvement/increase in risk perception impacting cost of equity and valuation. |

Source: Goldman Sachs Global Investment Research

# Estimate changes: Cost of Risk is the major driver of revisions

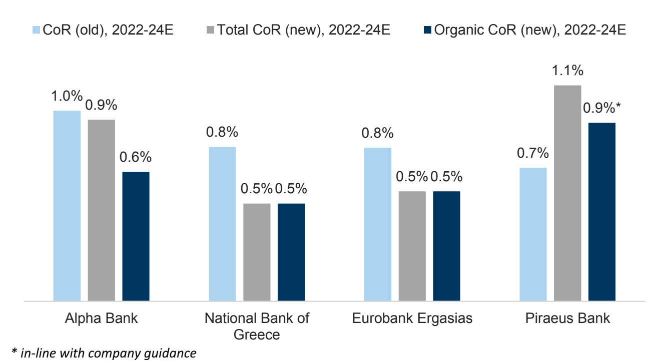
We have changed our estimates for the Greek banks under our coverage to reflect the latest sector trends and companies' guidance updates. The key drivers of our EPS changes are reviewed assumptions on performing loan portfolios and fee income growth, as well as CoR following our analysis of remaining NPE on balance sheets and coverage ratios, and lower costs amid cost optimization programs. Specifically, we increase our FY22-24 EPS forecasts for Eurobank and NBG (Exhibit 45) on higher core income (up by 8%/12% on average in FY22-24 for Eurobank/NBG) and lower CoR (down by 22bps/28 bps on average in FY22-24 for Eurobank/NBG) in light of NPE clean-ups for these banks being almost finished. For Alpha, we decrease our FY22 EPS estimate from EUR0.20 to EUR0.15 amid more conservative NIM forecasts and a higher CoR (250bps vs. 170bps previously), while increasing our FY24E EPS estimate by 23% on the back of stronger asset quality post NPE reduction (with a CoR of 70bps vs. 100bps previously). For Piraeus, our FY22-24E EPS estimates decrease by 3-9% in FY22-24E, mainly driven by c.20% higher CoR expectations given Piraeus has the highest remaining NPE balance among the four banks.

**Exhibit 45: Summary of EPS changes**

| Per share (EUR) | Alpha Bank | | | Eurobank | | | National Bank of Greece | | | Piraeus | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2022E | 2023E | 2024E | 2022E | 2023E | 2024E | 2022E | 2023E | 2024E | 2022E | 2023E | 2024E |
| EPS New | 0.15 | 0.22 | 0.27 | 0.15 | 0.16 | 0.19 | 0.53 | 0.58 | 0.66 | 0.23 | 0.33 | 0.42 |
| EPS Old | 0.20 | 0.22 | 0.22 | 0.11 | 0.12 | 0.11 | 0.18 | 0.25 | 0.32 | 0.24 | 0.36 | 0.43 |
| Change | -22% | 0% | 23% | 36% | 41% | 69% | >100% | >100% | >100% | -6% | -9% | -3% |

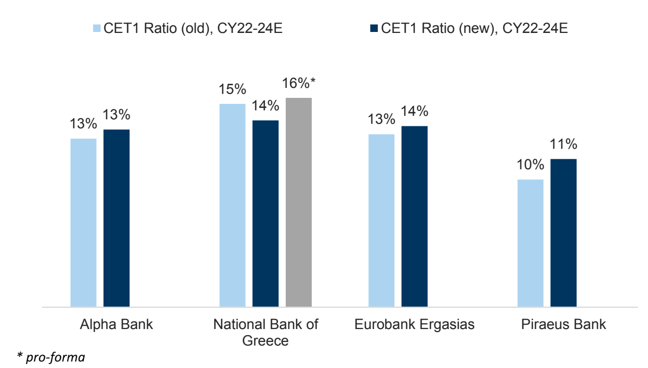
Source: Goldman Sachs Global Investment Research

**Exhibit 46: We have reviewed our assumptions on CoR for the banks following a detailed analysis of their remaining NPE balance and coverage ratios**




Source: Goldman Sachs Global Investment Research

**Exhibit 47: Stronger organic capital generation, with ROTE of 6.5%/8.9%/9.6%/5.5% for Alpha/NBG/Eurobank/Piraeus in FY22-24E, translates into higher capital adequacy levels**




Source: Goldman Sachs Global Investment Research

# Eurobank: The fastest balance sheet clean-up and top-quartile organic capital generation; upgrade to Buy

Consistent with our view on the Greek banking system, we believe Eurobank is at a multi-year inflection point. We view positively the progress made by management on NPE resolution, provision reserve build-up, ROTE recovery and restoration of capital buffers. Our FY23 estimates imply: (1) Eurobank being well on track to reach average European ROTE levels, (2) NPE ratio converging to EU/CEEMEA levels, and (3) capital buffers allowing for dividend distribution.

Given the concentrated nature of the Greek banking market and the relatively similar loan exposures, we differentiate amongst banks on our '3C' criteria, namely (1) Credit quality (progress on NPE resolution and cost of risk), (2) Core capital buffers (CET-1), and (3) Capital generation (ROTE). In this context, Eurobank screens favorably on our FY23 estimates: we forecast the second highest CET-1 of 13.7% for the bank, the highest ROTE of 9.2% in FY23 and a Texas ratio of 25% (vs. a 34% average for other Greek banks).

With the stock trading at 0.6x FY23E tangible book, we believe the market is yet to fully appreciate the bank's medium-term internal capital generation potential. Indeed, we forecast a strong rebound in ROTE from c.6% in FY21E to c.9% in FY23E, underpinned by: (1) a performing loans CAGR of 6.3% for FY22-24E versus 2.8% over FY19-21E, supported by an improving backdrop and completion of the loan book cleanup, (2) a FY22-24E fee income CAGR of 7.2% led by loan origination and transaction volumes, (3) organic cost of risk improvement to 50bp in FY24E (down 30bps from FY21E), led by successful NPE resolution and improving macro conditions, and (4) positive operating jaws (C/I decrease of c.5 pp over FY21-24E) led by strong cost control and revenue growth. We are 7% above consensus on FY23E earnings, mainly due to higher volume growth and lower cost of risk. We believe an update on NPE resolution and a medium-term guidance announcement during the FY21 results should be a catalyst for consensus upgrades and stock price performance.

Our capital-adjusted ROTE/COE-based 12-month price target is EUR1.4 (up from EUR0.65). This implies 22% upside from current levels, which is the highest within our Greek banks coverage and attractive in a CEEMEA financials context.

Key downside risks to our view and price target include: (1) a weaker-than-expected macro backdrop, (2) unfavorable regulatory changes, (3) competitive pressures impacting pricing and volumes, (4) a lower-than-expected performing loan portfolio growth, (5) meaningful increase in risk perceptions impacting cost of equity and valuation, and (6) negative capital surprises.

### Exhibit 48: Eurobank: Key financials and ratios

| Income statement | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17E | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII | 1.42 | 1.38 | 1.35 | 1.33 | 1.31 | 1.31 | 1.38 | -3% | -3% | -2% | -2% | -2% | 0% | 5% |
| Fees | 0.31 | 0.35 | 0.38 | 0.44 | 0.48 | 0.51 | 0.54 | 16% | 14% | 9% | 13% | 9% | 7% | 5% |
| Core Revenues | 1.73 | 1.73 | 1.73 | 1.76 | 1.79 | 1.82 | 1.91 | 0% | 0% | 0% | 2% | 1% | 2% | 5% |
| Other | 0.12 | 0.11 | 0.45 | 0.09 | 0.08 | 0.07 | 0.07 | -21% | -5% | 297% | -80% | -9% | -15% | 0% |
| Total income | 1.85 | 1.84 | 2.18 | 1.85 | 1.87 | 1.89 | 1.98 | -2% | 0% | 18% | -15% | 1% | 1% | 5% |
| Operating expenses | -0.88 | -0.90 | -0.87 | -0.87 | -0.86 | -0.84 | -0.83 | -3% | 3% | -4% | 0% | -1% | -2% | -2% |
| Pre-provision profits | 0.97 | 0.94 | 1.31 | 0.98 | 1.00 | 1.05 | 1.15 | -1% | -2% | 39% | -25% | 2% | 4% | 10% |
| Impairments & other | -0.67 | -0.63 | -0.59 | -0.41 | -0.25 | -0.24 | -0.20 | -15% | -6% | -6% | -31% | -40% | -2% | -18% |
| Pre-tax profit | 0.29 | 0.31 | 0.72 | 0.57 | 0.75 | 0.80 | 0.96 | -- | -- | -- | -- | -- | -- | -- |
| Profit after-tax | 0.20 | 0.26 | 0.54 | 0.42 | 0.57 | 0.60 | 0.72 | -- | -- | -- | -- | -- | -- | -- |
| Net attributable income | 0.09 | 0.13 | -1.21 | 0.33 | 0.53 | 0.56 | 0.68 | -- | -- | -- | -- | -- | -- | -- |

| Balance sheet | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17E | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Customer loans (net) | 36.2 | 37.4 | 37.4 | 38.1 | 39.4 | 41.3 | 43.4 | -2% | 3% | 0% | 2% | 4% | 5% | 5% |
| Customer deposits | 39.1 | 44.8 | 47.3 | 51.8 | 54.2 | 55.5 | 56.1 | 15% | 15% | 5% | 9% | 5% | 2% | 1% |
| Total assets | 58.0 | 64.8 | 67.7 | 74.1 | 77.1 | 78.9 | 80.3 | -3% | 12% | 5% | 9% | 4% | 2% | 2% |
| Ordinary shareholders' equity | 5.0 | 6.7 | 5.2 | 5.6 | 6.1 | 6.7 | 7.4 | -19% | 33% | -21% | 7% | 9% | 9% | 10% |

| Per share data | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17E | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS EPS | 0.09 | 0.08 | 0.15 | 0.09 | 0.15 | 0.16 | 0.19 | 22% | -11% | 79% | -39% | 69% | 7% | 19% |
| DPS | - | - | - | - | - | - | - | -- | -- | -- | -- | -- | -- | -- |
| BVPS | 2.3 | 1.8 | 1.4 | 1.5 | 1.6 | 1.8 | 2.0 | -19% | -21% | -21% | 7% | 9% | 9% | 10% |
| TBVPS | 2.2 | 1.7 | 1.3 | 1.4 | 1.6 | 1.7 | 1.9 | -20% | -23% | -21% | 7% | 10% | 10% | 11% |

| Ratios | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17E | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII / AIEA | 2.9% | 2.7% | 2.6% | 2.5% | 2.3% | 2.3% | 2.3% | -0.1pp | -0.2pp | -0.1pp | -0.1pp | -0.2pp | -0.1pp | 0.1pp |
| Cost / Income | 48% | 49% | 40% | 47% | 46% | 45% | 42% | -0.6pp | 1.3pp | -9.0pp | 7.0pp | -0.6pp | -1.6pp | -2.9pp |
| Credit costs / avg gross loans | 147bps | 140bps | 136bps | 100bps | 61bps | 58bps | 46bps | -5bps | -7bps | -5bps | -36bps | -39bps | -3bps | -12bps |
| Loans / deposits | 93% | 83% | 79% | 74% | 73% | 74% | 77% | -16.9pp | -9.4pp | -4.2pp | -5.6pp | -0.8pp | 1.6pp | 2.8pp |
| GS ROE | 3.9% | 4.3% | 9.3% | 6.0% | 9.0% | 8.8% | 9.7% | 1.1pp | 0.4pp | 5.0pp | -3.3pp | 3.0pp | -0.2pp | 0.8pp |
| GS ROTE | 4.0% | 4.6% | 10.0% | 6.3% | 9.4% | 9.2% | 10.1% | 1.1pp | 0.6pp | 5.4pp | -3.6pp | 3.1pp | -0.2pp | 0.8pp |
| ROA | 0.3% | 0.4% | 0.8% | 0.6% | 0.7% | 0.8% | 0.9% | 0.1pp | 0.1pp | 0.4pp | -0.2pp | 0.2pp | 0.0pp | 0.1pp |
| NPE ratio | 37.1% | 29.3% | 13.9% | 7.5% | 5.9% | 4.3% | 2.7% | -5.5pp | -7.9pp | -15.3pp | -643% | -1.7pp | -1.6pp | -1.5pp |
| Coverage ratio | 52% | 54% | 61% | 70% | 73% | 78% | 83% | 1.8pp | 1.8pp | 6.5pp | 9.6pp | 3.0pp | 4.6pp | 5.4pp |
| CET 1 % (Fully Loaded) | 11.3% | 14.6% | 12.0% | 12.3% | 13.1% | 13.7% | 14.4% | -3.8pp | 3.3pp | -2.6pp | 0.3pp | 0.8pp | 0.6pp | 0.7pp |
| Dividend payout | 0% | 0% | 0% | 0% | 0% | 0% | 0% | -- | -- | -- | -- | -- | -- | -- |

Source: Company data, Goldman Sachs Global Investment Research

# Alpha Bank: Completion of balance sheet clean-up and progress on cost optimization to drive ROTE rebound; reiterate Buy

We reiterate our Buy rating on Alpha, which screens favourably on our 3Cs (Credit quality, Core capital buffers and Capital generation) framework. We view positively the progress made by management on NPE resolution, provision reserve build-up, ROTE recovery and restoration of capital buffers. Our FY23 estimates imply: (1) Alpha being well on track to reach average European ROTE levels, (2) the NPE ratio converging to EU/CEEMEA levels, and (3) capital buffers allowing for dividend distribution.

Within a supportive macro outlook characterized by improving economic growth and normalization in rates, we forecast a strong rebound in Alpha's ROTE from c.5% in FY21E to 8% by FY23E, underpinned by: (1) a performing loans CAGR of 6.6% in FY22-24E versus 3.8% over FY19-21E driven by an improving backdrop and completion of the loan book cleanup, (2) loan origination and transaction volume-led fee income growth of 5.3% over FY21-23E, (3) an organic cost of risk improvement of c.40bp in FY22-24E (from 90bps in 2021E to 50bps in FY24E) led by successful NPE resolution and improving macro conditions, and (4) c.11bp of positive operating jaws over FY22-24E, led by strong cost control and revenue growth.

As a result, we forecast Alpha's CET1 (fully-loaded) improving from 12.0% in FY21 to 13.3% by FY23 (vs. minimum requirements of 9.2%/9.7% in FY21E/23E).

Despite the stock being up 86%/34% over the LTM and year to date respectively, now trading at 0.5x FY23E tangible book, we believe the market is yet to fully appreciate the bank's medium-term ROTE generation potential. We are 3% above consensus on FY22-23E earnings, mainly on higher volume growth and lower cost of risk assumptions. We believe an update on NPE resolution and a medium-term guidance announcement during FY21 results should be a catalyst for consensus upgrades and stock price performance.

Our capital-adjusted ROTE/COE-based 12-month price target is EUR1.68 (up from EUR1.12); this implies 18% upside from current levels, which is attractive in a CEEMEA financials context.

Key downside risks to our view and price target include: (1) a weaker-than-expected macro backdrop, (2) delays in NPE resolution, (3) regulatory changes, (4) competitive pressures impacting pricing and volumes, (5) a meaningful increase in risk perception impacting cost of equity and valuation, and (6) lower-than-assumed scope for cost savings.

**Exhibit 49: Alpha Bank: Key financials and ratios**

| Income statement | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII | 1.76 | 1.55 | 1.54 | 1.38 | 1.20 | 1.26 | 1.34 | -10% | -12% | 0% | -10% | -14% | 6% | 6% |
| Fees | 0.33 | 0.34 | 0.34 | 0.40 | 0.42 | 0.45 | 0.47 | 2% | 3% | -1% | 20% | 4% | 7% | 5% |
| Core Revenues | 2.09 | 1.89 | 1.88 | 1.79 | 1.62 | 1.71 | 1.81 | -8% | -10% | -1% | -5% | -10% | 6% | 6% |
| Other | 0.51 | 0.43 | 0.71 | 0.16 | 0.14 | 0.14 | 0.14 | 159% | -15% | 65% | -78% | -13% | 0% | 0% |
| Total income | 2.60 | 2.32 | 2.59 | 1.95 | 1.76 | 1.85 | 1.95 | 6% | -11% | 12% | -25% | -10% | 5% | 5% |
| Operating expenses | -1.16 | -1.17 | -1.16 | -1.19 | -0.98 | -0.89 | -0.88 | -10% | 1% | -1% | 3% | -18% | -9% | -2% |
| Pre-provision profits | 1.44 | 1.15 | 1.43 | 0.75 | 0.78 | 0.96 | 1.07 | 23% | -20% | 25% | -47% | 4% | 23% | 12% |
| Impairments & other | -1.73 | -0.99 | -1.32 | -3.66 | -0.59 | -0.26 | -0.20 | 72% | -43% | 33% | 178% | -84% | -56% | -24% |
| Pre-tax profit | -0.29 | 0.16 | 0.11 | -2.91 | 0.19 | 0.70 | 0.87 | -- | -- | -- | -- | -- | -- | -- |
| Profit after-tax | 0.05 | 0.11 | 0.10 | -2.77 | 0.13 | 0.50 | 0.62 | -- | -- | -- | -- | -- | -- | -- |
| Net attributable income | 0.05 | 0.11 | 0.10 | -2.77 | 0.13 | 0.50 | 0.62 | -- | -- | -- | -- | -- | -- | -- |

| Balance sheet | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Customer loans (net) | 40.2 | 39.3 | 39.4 | 35.6 | 36.8 | 38.1 | 39.8 | -7% | -2% | 0% | -9% | 3% | 4% | 4% |
| Customer deposits | 38.7 | 40.4 | 43.8 | 48.2 | 47.7 | 47.9 | 48.4 | 11% | 4% | 9% | 10% | -1% | 0% | 1% |
| Total assets | 61.0 | 63.5 | 70.1 | 74.1 | 72.9 | 74.2 | 75.3 | 0% | 4% | 10% | 6% | -2% | 2% | 1% |
| Ordinary shareholders' equity | 8.1 | 8.5 | 8.3 | 6.3 | 6.4 | 6.9 | 7.5 | -15% | 4% | -2% | -25% | 2% | 8% | 9% |

| Per share data | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS EPS | 0.03 | 0.07 | 0.06 | 0.18 | 0.15 | 0.22 | 0.27 | -64% | 99% | -15% | 203% | -14% | 43% | 25% |
| DPS | - | - | - | - | - | - | - | -- | -- | -- | -- | -- | -- | -- |
| BVPS | 5.3 | 5.5 | 5.4 | 2.7 | 2.8 | 3.0 | 3.3 | -15% | 4% | -2% | -49% | 2% | 8% | 9% |
| TBVPS | 5.0 | 5.2 | 5.0 | 2.5 | 2.6 | 2.8 | 3.1 | -16% | 4% | -3% | -49% | 2% | 8% | 10% |

| Ratios | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII / AIEA | 3.4% | 3.0% | 2.9% | 2.7% | 2.3% | 2.4% | 2.5% | -0.2pp | -0.4pp | -0.1pp | -0.3pp | -0.3pp | 0.1pp | 0.1pp |
| Cost / Income | 45% | 51% | 45% | 61% | 56% | 48% | 45% | -7.9pp | 6.0pp | -5.9pp | 16.6pp | -5.7pp | -7.4pp | -3.2pp |
| Credit costs / avg gross loans | 315bps | 196bps | 267bps | 248bps | 76bps | 67bps | 51bps | 144bps | -119bps | 71bps | -18bps | -173bps | -9bps | -16bps |
| Loans / deposits | 104% | 97% | 90% | 74% | 77% | 80% | 82% | -20.3pp | -6.6pp | -7.4pp | -15.9pp | 3.1pp | 2.5pp | 2.7pp |
| GS ROE | 0.6% | 1.3% | 1.1% | 4.6% | 5.5% | 7.5% | 8.6% | -0.9pp | 0.6pp | -0.2pp | 3.5pp | 0.9pp | 2.0pp | 1.2pp |
| GS ROTE | 0.7% | 1.3% | 1.1% | 5.0% | 5.9% | 8.0% | 9.2% | -1.0pp | 0.7pp | -0.2pp | 3.8pp | 1.0pp | 2.1pp | 1.2pp |
| ROA | 0.1% | 0.2% | 0.1% | 0.4% | 0.5% | 0.7% | 0.8% | -0.1pp | 0.1pp | 0.0pp | 0.3pp | 0.0pp | 0.2pp | 0.2pp |
| NPE ratio | 48.9% | 44.8% | 42.5% | 12.8% | 7.3% | 4.8% | 2.7% | -2.8pp | -4.1pp | -2.3pp | -2975% | -5.5pp | -2.5pp | -2.2pp |
| Coverage ratio | 48% | 44% | 47% | 65% | 68% | 69% | 69% | 2.6pp | -4.2pp | 3.3pp | 17.7pp | 3.1pp | 1.4pp | -0.2pp |
| CET 1 % (Fully Loaded) | 14.0% | 14.9% | 14.8% | 12.0% | 12.6% | 13.3% | 14.5% | -4.3pp | 0.9pp | -0.1pp | -2.8pp | 0.6pp | 0.7pp | 1.2pp |
| Dividend payout | 0% | 0% | 0% | 0% | 0% | 0% | 0% | -- | -- | -- | -- | -- | -- | -- |

Source: Company data, Goldman Sachs Global Investment Research

# Piraeus: Significant progress on NPE reduction priced in; remain Neutral

We maintain our Neutral rating on Piraeus. We view positively the progress Piraeus management has made on NPE balance reduction, provision reserve build-up, ROTE recovery and restoration of capital buffers. That said, on our 3Cs (Credit quality, Core capital buffers and Capital generation) framework, the bank lags domestic peers on our FY23 estimates with: (1) an NPE ratio of 5.3% and cost of risk of 90bp, above the 4.5% and 60bp average for other Greek banks, respectively, (2) CET-1 of 11.1%, below the sector average of 13%, and (3) ROTE generation of 6.3% versus a sector average of 8.6%. We acknowledge the valuation discount to peers, which in our view reflects the gap on NPE resolution and CET-1 buffers and await further progress on these metrics relative to the sector to potentially turn more constructive on the stock.

Within an improving macro backdrop, we forecast a solid recovery in ROTE from 3.8% in FY21E to 6.3% by FY23E, underpinned by: (1) a performing loans CAGR of 5.9% for FY22-24E versus 1.6% over FY19-21E driven by an improving backdrop and completion of the loan book cleanup, (2) a FY22-24E fee income CAGR of 5.4% driven by loan origination and transaction volumes, (3) stable organic cost of risk of c.90bp, and (4) c.5bp of positive operating jaws led by strong cost control and revenue growth.

The stock is up 32% year to date, outperforming CEEMEA peers. Post this outperformance, the stock trades at 0.3x 12-month forward tangible book. Our capital-adjusted ROTE/COE 12-month price target is EUR1.70 (up from EUR1.47), which implies 2% upside at current levels.

Key upside/downside risks to our view and price target include: (1) a stronger/weaker-than-expected macro backdrop, (2) faster/delayed NPE resolutions, (3) regulatory changes, (4) market share gains/competitive pressures impacting pricing and volumes, and (5) meaningful improvement/increase in risk perception impacting cost of equity and valuation.

**Exhibit 50: Piraeus: Key financials and ratios**

| Income statement | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII | 1.41 | 1.44 | 1.49 | 1.41 | 1.18 | 1.18 | 1.19 | -14% | 2% | 4% | -5% | -16% | 0% | 1% |
| Fees | 0.34 | 0.32 | 0.32 | 0.38 | 0.41 | 0.43 | 0.45 | 2% | -6% | 0% | 21% | 6% | 5% | 5% |
| Core Revenues | 1.75 | 1.75 | 1.80 | 1.79 | 1.59 | 1.61 | 1.64 | -11% | 0% | 3% | -1% | -11% | 1% | 2% |
| Other | 0.13 | 0.42 | 0.09 | 1.09 | 0.10 | 0.08 | 0.10 | 12% | 216% | -79% | 1109% | -91% | -20% | 25% |
| Total income | 1.88 | 2.17 | 1.89 | 2.88 | 1.69 | 1.69 | 1.74 | -10% | 16% | -13% | 52% | -41% | 0% | 3% |
| Operating expenses | -1.16 | -1.01 | -1.08 | -0.96 | -0.86 | -0.82 | -0.81 | 5% | -13% | 7% | -12% | -10% | -4% | -2% |
| Pre-provision profits | 0.72 | 1.16 | 0.81 | 1.92 | 0.83 | 0.86 | 0.94 | -27% | 61% | -30% | 138% | -57% | 4% | 8% |
| Impairments & other | -0.64 | -0.77 | -1.34 | -4.30 | -0.54 | -0.33 | -0.30 | -71% | 20% | 73% | 221% | -87% | -38% | -12% |
| Pre-tax profit | 0.08 | 0.39 | -0.53 | -2.38 | 0.29 | 0.53 | 0.64 | -- | -- | -- | -- | -- | -- | -- |
| Profit after-tax | 0.17 | 0.27 | -0.66 | -2.57 | 0.17 | 0.41 | 0.52 | -- | -- | -- | -- | -- | -- | -- |
| Net attributable income | -0.16 | 0.16 | -0.66 | -2.58 | 0.16 | 0.40 | 0.51 | -- | -- | -- | -- | -- | -- | -- |

| Balance sheet | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Customer loans (net) | 39.8 | 39.2 | 39.6 | 34.9 | 35.7 | 36.8 | 37.8 | -11% | -1% | 1% | -12% | 2% | 3% | 3% |
| Customer deposits | 44.7 | 47.4 | 49.6 | 54.0 | 55.6 | 55.9 | 56.6 | 5% | 6% | 5% | 9% | 3% | 1% | 1% |
| Total assets | 61.9 | 61.2 | 71.6 | 77.7 | 79.4 | 80.2 | 81.4 | -8% | -1% | 17% | 9% | 2% | 1% | 1% |
| Ordinary shareholders' equity | 5.3 | 5.6 | 5.0 | 6.2 | 6.4 | 6.8 | 7.3 | -27% | 5% | -11% | 24% | 3% | 6% | 7% |

| Per share data | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS EPS | 11.3 | 5.6 | -24.63 | 1.1 | 0.23 | 0.33 | 0.42 | -331% | -50% | -537% | -104% | -79% | 45% | 27% |
| DPS | - | - | - | - | - | - | - | -- | -- | -- | -- | -- | -- | -- |
| BVPS | 202 | 212 | 189 | 5.0 | 5.1 | 5.4 | 5.8 | -27% | 5% | -11% | -97% | 3% | 6% | 7% |
| TBVPS | 191 | 201 | 179 | 4.8 | 4.9 | 5.2 | 5.6 | -29% | 5% | -11% | -97% | 3% | 7% | 8% |

| Ratios | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII / AIEA | 3.2% | 3.2% | 3.0% | 2.8% | 2.3% | 2.2% | 2.2% | 0.0pp | 0.0pp | -0.2pp | -0.1pp | -0.6pp | 0.0pp | 0.0pp |
| Cost / Income | 62% | 47% | 57% | 33% | 51% | 49% | 46% | 8.7pp | -15.1pp | 10.7pp | -24.1pp | 17.6pp | -2.0pp | -2.5pp |
| Credit costs / avg gross loans | 96bps | 139bps | 226bps | n/m | 95bps | 92bps | 80bps | -227bps | 43bps | 87bps | -- | -- | -3bps | -12bps |
| Loans / deposits | 89% | 83% | 80% | 65% | 64% | 66% | 67% | -15.8pp | -6.2pp | -2.9pp | -15.2pp | -0.5pp | 1.7pp | 0.9pp |
| GS ROE | 5.3% | 2.7% | -12.0% | 3.6% | 4.5% | 6.1% | 7.4% | 7.0pp | -2.6pp | -14.7pp | -- | 0.9pp | 1.6pp | 1.4pp |
| GS ROTE | 5.6% | 2.9% | -12.7% | 3.8% | 4.7% | 6.3% | 7.7% | 7.4pp | -2.7pp | -15.6pp | -- | 1.0pp | 1.6pp | 1.4pp |
| ROA | 0.5% | 0.2% | -1.0% | 1.2% | 0.4% | 0.5% | 0.6% | 0.6pp | -0.2pp | -1.3pp | -- | -0.8pp | 0.2pp | 0.1pp |
| NPE ratio | 51.5% | 48.8% | 45.3% | 14.4% | 8.5% | 5.3% | 2.7% | -3.0pp | -2.7pp | -3.5pp | -3091% | -6.0pp | -3.2pp | -2.6pp |
| Coverage ratio | 49% | 45% | 44% | 38% | 41% | 41% | 43% | 1.5pp | -3.9pp | -0.8pp | -6.0pp | 2.4pp | 0.0pp | 2.5pp |
| CET 1 % (Fully Loaded) | 6.2% | 7.4% | 6.4% | 9.9% | 10.3% | 11.1% | 12.3% | -4.1pp | 1.2pp | -0.9pp | 3.4pp | 0.4pp | 0.8pp | 1.2pp |
| Dividend payout | 0% | 0% | 0% | 0% | 0% | 0% | 0% | -- | -- | -- | -- | -- | -- | -- |

Source: Company data, Goldman Sachs Global Investment Research

# National Bank of Greece: We remain Not Rated



In our view, NBG has made significant progress on NPE resolution, provision reserve build-up, ROTE recovery and restoration of capital buffers. Accordingly, within our Greek banks coverage, NBG screens as strong on our 3Cs (Credit quality, Core capital buffers and Capital generation) framework.

Our FY23 estimates imply: (1) NBG being well on track to deliver ROTE generation close to average European levels; (2) its NPE ratio converging to EU/CEEMEA levels, and (3) capital buffers allowing for dividend distribution.

Within a supportive macro outlook characterized by improving economic growth and normalization in rates, we forecast a recovery in NBG's ROTE from 5.9% in FY21E to 8.5% by FY23E, underpinned by: (1) a performing loan CAGR of 6.8% for FY22-24E versus 4% over FY19-21E, driven by an improving backdrop and completion of the loan book cleanup, (2) loan origination and transaction volume-led fee income growth of 6% over FY22-24E, (3) cost of risk improvement of 40bp (from 90bps in FY21E to 50bps in FY24E) led by NPE resolution and improving macro conditions, and (4) c.5bp of positive operating jaws led by strong cost control and revenue growth. As a result, we forecast NBG's CET1 (fully-loaded) improving to 14.1% by FY23.

In the context of our 3Cs framework, we note that NBG has: (1) one of the lowest NPEs and cost of risk of 4.5% and 50bp respectively, versus sector averages of 4.7% and 70bp in 2023E, (2) the highest capital buffers, with CET-1 of 14.1% (above the sector average of 13%), and (3) ROTE generation of 8.5%, higher than the sector average of 8.0%. The stock is amongst the best performing within CEEMEA financials, up 75% LTM (versus CEEMEA banks up 44%) and 28% year to date (versus CEEMEA banks up 8%).

We are 5% above FY22-23E consensus EPS, mainly on higher volume growth and lower cost of risk assumptions.

### Exhibit 51: NBG: Key financials and ratios

| Income statement | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII | 1.11 | 1.19 | 1.17 | 1.20 | 1.12 | 1.13 | 1.19 | -19% | 7% | -2% | 2% | -6% | 1% | 5% |
| Fees | 0.24 | 0.26 | 0.26 | 0.28 | 0.31 | 0.33 | 0.34 | 1% | 6% | 0% | 11% | 11% | 4% | 3% |
| Core Revenues | 1.35 | 1.45 | 1.42 | 1.48 | 1.44 | 1.46 | 1.53 | -16% | 7% | -1% | 4% | -3% | 2% | 5% |
| Other | -0.07 | 0.23 | 1.10 | 0.41 | 0.02 | 0.02 | 0.02 | -- | -- | -- | -- | -- | -- | -- |
| Total income | 1.28 | 1.68 | 2.52 | 1.89 | 1.46 | 1.48 | 1.55 | -20% | 31% | 51% | -25% | -23% | 2% | 5% |
| Operating expenses | -0.88 | -0.85 | -0.81 | -0.74 | -0.74 | -0.73 | -0.72 | -6% | -4% | -4% | -9% | 0% | -2% | -2% |
| Pre-provision profits | 0.40 | 0.83 | 1.71 | 1.15 | 0.71 | 0.75 | 0.83 | -41% | 107% | 106% | -33% | -38% | 5% | 11% |
| Impairments & other | -0.31 | -0.35 | -1.11 | -0.32 | -0.19 | -0.18 | -0.18 | -62% | 12% | 220% | -71% | -41% | -5% | 0% |
| Pre-tax profit | 0.09 | 0.48 | 0.60 | 0.82 | 0.52 | 0.57 | 0.65 | -- | -- | -- | -- | -- | -- | -- |
| Profit after-tax | 0.07 | 0.47 | 0.59 | 0.81 | 0.49 | 0.53 | 0.61 | -- | -- | -- | -- | -- | -- | -- |
| Net attributable income | -0.08 | -0.25 | 0.04 | 0.86 | 0.49 | 0.53 | 0.61 | -- | -- | -- | -- | -- | -- | -- |

| Balance sheet | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Customer loans (net) | 30.0 | 29.2 | 26.8 | 30.1 | 34.7 | 36.6 | 38.3 | -6% | -3% | -8% | 12% | 15% | 5% | 5% |
| Customer deposits | 43.0 | 43.7 | 48.5 | 51.1 | 53.0 | 54.0 | 54.5 | 7% | 2% | 11% | 5% | 4% | 2% | 1% |
| Total assets | 65.1 | 64.2 | 77.5 | 81.8 | 84.2 | 86.0 | 87.4 | 1% | -1% | 21% | 6% | 3% | 2% | 2% |
| Ordinary shareholders' equity | 5.0 | 5.3 | 5.1 | 5.8 | 6.3 | 6.8 | 7.4 | -26% | 6% | -4% | 14% | 8% | 8% | 9% |

| Per share data | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS EPS | 0.03 | 0.49 | 0.58 | 0.34 | 0.53 | 0.58 | 0.66 | n/m | n/m | 18% | -43% | 58% | 9% | 14% |
| DPS | - | - | - | - | - | - | - | -- | -- | -- | -- | -- | -- | -- |
| BVPS | 5.4 | 5.8 | 5.5 | 6.3 | 6.9 | 7.4 | 8.1 | -26% | 6% | -4% | 14% | 8% | 8% | 9% |
| TBVPS | 5.3 | 5.5 | 5.2 | 6.0 | 6.5 | 7.1 | 7.7 | -27% | 5% | -6% | 14% | 9% | 9% | 9% |

| Ratios | 2018 | 2019 | 2020 | 2021E | 2022E | 2023E | 2024E | 18/17 | 19/18 | 20/19 | 21/20E | 22/21E | 23/22E | 24/23E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NII / AIEA | 2.7% | 2.9% | 2.5% | 2.5% | 2.1% | 2.1% | 2.1% | -0.4pp | 0.2pp | -0.3pp | -0.1pp | -0.3pp | -0.1pp | 0.0pp |
| Cost / Income | 69% | 51% | 32% | 39% | 51% | 49% | 46% | 10.6pp | -18.3pp | -18.2pp | 7.0pp | 11.7pp | -1.8pp | -3.0pp |
| Credit costs / avg gross loans | 74bps | 99bps | 89bps | 87bps | 53bps | 48bps | 45bps | -106bps | 25bps | -10bps | -2bps | -34bps | -5bps | -2bps |
| Loans / deposits | 70% | 67% | 55% | 59% | 66% | 68% | 70% | -9.9pp | -2.9pp | -11.5pp | 3.7pp | 6.6pp | 2.2pp | 2.4pp |
| GS ROE | 0.6% | 8.4% | 10.2% | 5.6% | 8.1% | 8.1% | 9.1% | 3.4pp | 7.8pp | 1.8pp | -4.6pp | 2.5pp | 0.1pp | 1.0pp |
| GS ROTE | 0.6% | 8.6% | 10.6% | 5.9% | 8.5% | 8.5% | 9.5% | 3.5pp | 8.0pp | 2.0pp | -4.8pp | 2.6pp | 0.0pp | 1.0pp |
| ROA | 0.1% | 0.7% | 0.7% | 0.4% | 0.6% | 0.6% | 0.7% | 0.3pp | 0.6pp | 0.0pp | -0.4pp | 0.2pp | 0.0pp | 0.1pp |
| NPE ratio | 0.0% | 31.3% | 15.0% | 11.5% | 5.0% | 4.5% | 4.1% | 0.0pp | 31.3pp | -16.3pp | -3.5pp | -6.5pp | -0.5pp | -0.4pp |
| Coverage ratio | 0% | 53% | 62% | 71% | 100% | 110% | 121% | 0.0pp | 53.1pp | 9.3pp | 8.1pp | 29.0pp | 10.3pp | 11.3pp |
| CET 1 % (Basel III) | 12.7% | 12.8% | 12.8% | 13.7% | 14.0% | 14.1% | 14.4% | -4.0pp | 0.0pp | 0.0pp | 0.9pp | 0.3pp | 0.1pp | 0.3pp |
| Dividend payout | 0% | 0% | 0% | 0% | 0% | 0% | 0% | -- | -- | -- | -- | -- | -- | -- |

Source: Company data, Goldman Sachs Global Investment Research

# Appendix 1: Securitization projects 2021-22E

**Exhibit 52: During 9M21, the four largest Greek banks completed NPE securitization deals to the amount of EUR28.8 bn, with c.EUR20 bn in the pipeline for 4Q21-1H22**

Securitization NPE deals of four largest Greek banks in 2021-22E

| Bank | Project | Value, EUR bn | Pricing (share of GBV, %) | Exp. period of completion | Status | Loan class participating | Buyer |
|---|---|---|---|---|---|---|---|
| Alpha Bank | Galaxy | 10.8 | 35% | 1H21 | Completed | Corporate, Consumer, Mortgages | Davidson Kempner |
| Piraeus Bank | Phoenix | 1.9 | 51% | 2Q21 | Completed | Mortgages (mainly) | Intrum |
| Piraeus Bank | Vega | 5.0 | 31% | 2Q21 | Completed | Commercial (80%), Mortgages (20%) | Intrum |
| Piraeus Bank | Ermis 1,2 | 0.2 | n/a | 2Q21, 3Q21 | Completed | Three portfolios of synthetic securitizations (mortgages) | n/a |
| Piraeus Bank | Sunrise 1 | 7.0 | 34% | 3Q21 | Completed | Corporate, Retail | Intrum, Serengeti AM |
| Alpha Bank | Cosmos | 3.4 | n/a | 3Q21 | Completed | Mortgages (55%), Consumer (11%), SBL (21%), Corporate (14%) | Davidson Kempner (51%) |
| Piraeus Bank | Leasing portfolio | 0.5 | n/a | 3Q21 | Completed | Leasing portfolio | n/a |
| National Bank of Greece | Frontier 1 | 6.1 | 50% | 2H21 | In progress | Mortgages (mainly), Secured corporate & SBLs, Consumer | Bain Capital and Fortress |
| National Bank of Greece | Frontier 2 | 1.5 | 50% | 1H22 | In progress | Mortgages, Corporate, Consumer | Bain Capital |
| Eurobank Ergasias | Mexico | 3.3 | n/a | 4Q21 | In progress | Corporate (15%), Retail (85%) | doValue S.p.A. |
| Piraeus Bank | Sunrise 2 | 2.6 | 47% | 4Q21 | In progress | Corporate, Retail | Intrum |
| Alpha Bank | Sky | 2.2 | n/a | 4Q21 | In progress | Cyprus portfolio: Mortgages (48%), Corporate (45%), Consumer (7%) | Cerberus |
| Alpha Bank | Orbit | 1.3 | n/a | 4Q21 | In progress | Mortgages (3%), SBL (6%), Consumer (91%) | |
| Piraeus Bank | Sunrise 3 | 0.8 | n/a | 4Q21 | In progress | Corporate, Retail | |
| Alpha Bank | Solar | 0.4 | n/a | 2Q22 | Announced | Corporate/SME | |
| Alpha Bank | Other | 0.8 | n/a | 2Q22 | Announced | Wholesale, Shipping & Leasing exposures | |
| Piraeus Bank | Shipping | 0.4 | n/a | 1H22 | Announced | Shipping | |
| Piraeus Bank | Other sales | 0.2 | n/a | 1H22 | Announced | Other sales | |
| Piraeus Bank | Organic flow, w/offs | 0.8 | n/a | 1H22 | Announced | Organic flow, w/offs | |
| **Completed in 9m21** | | **28.8** | | | | | |
| **Remaining NPE deals** | | **20.4** | | | | | |
| **Average price** | | | **41%** | | | | |

Source: Company data, compiled by Goldman Sachs Global Investment Research

# Appendix 2: Valuation Comps table

## Exhibit 53: Valuation sheet

| Valuation Summary | Market Cap | Price LC | Rating | PT | U/D | P/E | | | P/TBVPS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13-Feb-22 | US$ mn. | | | | | 2022E | 2023E | 2024E | 2022E | 2023E | 2024E |
| Greece | 14,877 | | | | | 7.8x | 6.4x | 5.3x | 0.6x | 0.5x | 0.5x |
| Alpha Bank | 3,754 | 1.4 | Buy | 1.68 | 18% | 9.4x | 6.6x | 5.3x | 0.6x | 0.5x | 0.5x |
| Bank of Piraeus | 2,423 | 1.7 | Neutral | 1.70 | 2% | 7.5x | 5.1x | 4.1x | 0.3x | 0.3x | 0.3x |
| Eurobank Ergasias | 4,804 | 1.1 | Buy | 1.40 | 22% | 7.4x | 6.9x | 5.8x | 0.7x | 0.6x | 0.6x |
| National Bank of Greece | 3,896 | 3.7 | Not Rated | | | 7.0x | 6.4x | 5.6x | 0.6x | 0.5x | 0.5x |
| Europe (excl. Greece) | 950,830 | | | | | 10.7x | 9.5x | 8.6x | 1.0x | 0.9x | 0.9x |
| Benelux | 113,260 | | | | | 12.9x | 11.8x | 10.9x | 1.2x | 1.1x | 1.1x |
| France | 173,205 | | | | | 9.1x | 8.4x | 7.9x | 0.8x | 0.8x | 0.7x |
| Ireland | 17,037 | | | | | 11.1x | 9.9x | 9.3x | 0.7x | 0.7x | 0.7x |
| Italy | 115,095 | | | | | 10.6x | 9.1x | 8.1x | 0.9x | 0.8x | 0.8x |
| Nordics | 176,368 | | | | | 11.3x | 10.8x | 9.8x | 1.3x | 1.3x | 1.2x |
| Poland | 33,695 | | | | | 12.4x | 10.7x | 9.8x | 1.4x | 1.3x | 1.2x |
| United Kingdom | 322,171 | | | | | 10.2x | 8.5x | 7.5x | 0.9x | 0.8x | 0.8x |
| CIS | 128,734 | | | | | 5.5x | 4.9x | 4.3x | 1.4x | 1.1x | 1.0x |
| Russia | 107,502 | | | | | 6.4x | 5.8x | 5.0x | 1.6x | 1.3x | 1.1x |
| Kazakhstan | 21,232 | | | | | 0.8x | 0.7x | 0.7x | 0.2x | 0.2x | 0.2x |
| Latin America | 201,243 | | | | | 8.1x | 7.5x | na | 1.6x | 1.4x | na |
| Brazil | 127,739 | | | | | 7.3x | 6.8x | 6.4x | 1.5x | 1.3x | 1.2x |
| Chile | 25,606 | | | | | 9.3x | 8.7x | 7.7x | 1.7x | 1.6x | 1.4x |
| Colombia | 8,293 | | | | | 9.1x | 8.4x | | 1.3x | 1.1x | |
| Mexico | 27,303 | | | | | 9.3x | 8.1x | 7.5x | 1.9x | 1.6x | 1.4x |
| Peru | 12,302 | | | | | 10.9x | 9.7x | 8.9x | 1.6x | 1.5x | 1.4x |
| MENA | 498,919 | | | | | 16.5x | 14.2x | 12.8x | 2.7x | 2.5x | 2.3x |
| Egypt | 6,398 | | | | | 6.3x | 5.4x | 4.7x | 1.4x | 1.2x | 1.1x |
| Kuwait | 24,627 | | | | | 20.3x | 16.8x | 14.6x | 2.4x | 2.2x | 2.1x |
| Qatar | 77,798 | | | | | 13.0x | 11.3x | 10.2x | 2.2x | 2.0x | 1.8x |
| Saudi Arabia | 277,092 | | | | | 18.5x | 15.7x | 14.0x | 3.3x | 3.0x | 2.7x |
| UAE | 113,005 | | | | | 13.7x | 12.6x | 11.5x | 2.0x | 1.8x | 1.7x |
| South Africa | 79,876 | | | | | 12.6x | 11.1x | 9.8x | 2.6x | 2.4x | 2.1x |
| Turkey | 12,719 | | | | | 3.1x | 2.9x | 2.5x | 0.5x | 0.4x | 0.4x |
| Asia | 3,264,827 | | | | | 9.8x | 8.6x | 12.7x | 1.4x | 1.2x | 1.8x |
| China (A-shares) | 1,368,003 | | | | | 6.3x | 5.8x | | 0.7x | 0.7x | |
| China (H-shares) | 1,028,765 | | | | | 5.8x | 5.4x | | 0.7x | 0.6x | |
| India | 491,747 | | | | | 24.1x | 19.5x | | 3.6x | 3.1x | |
| Indonesia | 140,809 | | | | | 18.8x | 16.0x | 14.7x | 3.0x | 2.7x | 2.5x |
| Philippines | 26,675 | | | | | 12.8x | 10.1x | 8.6x | 1.3x | 1.1x | 1.0x |
| Taiwan | 167,649 | | | | | 13.2x | 12.3x | 13.1x | 1.4x | 1.3x | 1.3x |
| Thailand | 41,179 | | | | | 9.9x | 9.2x | 8.0x | 0.8x | 0.7x | 0.7x |
| Europe (incl. Greece) | | | | | | 10.8x | 9.6x | 8.7x | 1.0x | 1.0x | 0.9x |
| CIS | | | | | | 5.5x | 4.9x | 4.3x | 1.4x | 1.1x | 1.0x |
| CEEMEA | | | | | | 13.7x | 11.8x | 10.6x | 2.4x | 2.1x | 1.9x |
| GEM | | | | | | 10.4x | 9.1x | 10.5x | 1.6x | 1.4x | 1.8x |
| GEM (ex China and India) | | | | | | 13.2x | 11.6x | 10.5x | 2.1x | 1.9x | 1.8x |

| Valuation Summary | ROTE | | | | Dividend Yield | | | Price Performance | | | Common Equity Tier I Ratio | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13-Feb-22 | 2021E | 2022E | 2023E | 2024E | 2022E | 2023E | 2024E | 1M US$ | YTD US$ | 12M US$ | 2021E | 2022E | 2023E | 2024E |
| Greece | 5.5% | 7.5% | 8.3% | 9.3% | 0.0% | 0.0% | 0.0% | 22% | 30% | 56% | 12.2% | 12.7% | 13.3% | 14.1% |
| Alpha Bank | 5.0% | 5.9% | 8.0% | 9.2% | | | | 25% | 34% | 86% | 12.0% | 12.6% | 13.3% | 14.5% |
| Bank of Piraeus | 3.8% | 4.7% | 6.3% | 7.7% | | | | 26% | 32% | -87% | 9.9% | 10.3% | 11.1% | 12.3% |
| Eurobank Ergasias | 6.3% | 9.4% | 9.2% | 10.1% | | | | 16% | 28% | 91% | 12.3% | 13.1% | 13.7% | 14.4% |
| National Bank of Greece | 5.9% | 8.5% | 8.5% | 9.5% | | | | 22% | 28% | 75% | 13.7% | 14.0% | 14.1% | 14.4% |
| Europe (excl. Greece) | 10.5% | 9.4% | 10.1% | 10.7% | 5.0% | 5.5% | 6.0% | 7% | 15% | 41% | 15.5% | 14.9% | 14.7% | 14.7% |
| Benelux | 10.2% | 8.9% | 9.5% | 9.9% | 6.5% | 5.5% | 6.0% | 3% | 9% | 48% | 16.1% | 15.8% | 15.0% | 14.9% |
| France | 9.6% | 9.0% | 9.3% | 9.5% | 5.6% | 6.0% | 6.4% | 7% | 14% | 49% | 12.6% | 12.6% | 12.3% | 12.0% |
| Ireland | 8.9% | 6.6% | 7.3% | 7.4% | 5.1% | 5.5% | 5.8% | 21% | 34% | 75% | 15.8% | 15.3% | 15.7% | 16.0% |
| Italy | 7.0% | 8.3% | 9.2% | 9.9% | 6.6% | 7.5% | 8.3% | 17% | 25% | 45% | 14.0% | 13.8% | 13.7% | 13.6% |
| Nordics | 12.4% | 11.7% | 11.8% | 12.5% | 5.4% | 5.5% | 6.0% | -1% | 1% | 22% | 18.4% | 17.7% | 17.7% | 17.8% |
| Poland | 10.2% | 12.7% | 13.6% | 13.7% | 4.0% | 4.6% | 5.0% | 5% | 10% | 78% | 16.6% | 16.5% | 16.6% | 16.8% |
| United Kingdom | 11.5% | 8.8% | 10.0% | 10.8% | 3.6% | 4.5% | 5.2% | 9% | 20% | 38% | 15.7% | 14.6% | 14.4% | 14.5% |
| CIS | 23.9% | 20.9% | 19.6% | 19.3% | 9.3% | 9.8% | 11.1% | -1% | -8% | 15% | 13.9% | 14.1% | 14.6% | 15.2% |
| Russia | 27.5% | 24.0% | 22.5% | 22.1% | 9.6% | 9.9% | 11.2% | -2% | -5% | 14% | 14.1% | 14.6% | 15.1% | 15.8% |
| Kazakhstan | 5.8% | 5.4% | 5.0% | 4.8% | 7.9% | 9.2% | 10.6% | 2% | -21% | 19% | 12.5% | 11.5% | 11.8% | 12.1% |
| Latin America | 18.8% | 19.9% | 19.9% | 19.9% | 6.6% | 6.9% | na | 13% | 20% | 1% | | | | |
| Brazil | 19.8% | 21.3% | 21.1% | 21.1% | 6.9% | 8.0% | 8.7% | 17% | 22% | 0% | | | | |
| Chile | 18.6% | 17.7% | 17.6% | 17.6% | 5.6% | 5.7% | 6.0% | 11% | 27% | -6% | | | | |
| Colombia | 15.9% | 13.9% | 14.9% | 14.9% | 3.3% | 3.6% | | 13% | 9% | -6% | | | | |
| Mexico | 17.5% | 18.8% | 19.8% | 19.8% | 8.5% | 4.9% | 5.6% | -4% | 3% | 19% | | | | |
| Peru | 14.1% | 16.3% | 16.8% | 16.8% | 3.1% | 4.6% | 5.2% | 17% | 27% | -8% | | | | |
| MENA | 14.9% | 16.9% | 17.9% | 18.2% | 3.4% | 3.8% | 4.3% | 6% | 9% | 52% | 15.7% | 15.5% | 15.5% | 15.5% |
| Egypt | 22.3% | 23.9% | 24.5% | 24.9% | 5.9% | 6.9% | 7.9% | -3% | -4% | 11% | | | | |
| Kuwait | 11.3% | 12.1% | 13.6% | 14.6% | 2.9% | 3.4% | 3.6% | 1% | 4% | 30% | 12.8% | 12.3% | 11.9% | 11.5% |
| Qatar | 15.9% | 17.7% | 18.5% | 18.7% | 3.5% | 4.1% | 4.6% | 5% | 6% | 28% | 14.0% | 13.4% | 13.6% | 13.8% |
| Saudi Arabia | 15.5% | 18.0% | 19.3% | 19.6% | 2.9% | 3.4% | 3.8% | 6% | 12% | 70% | 17.2% | 17.1% | 17.1% | 17.1% |
| UAE | 13.4% | 14.4% | 14.8% | 15.0% | 4.3% | 4.8% | 5.1% | 7% | 7% | 31% | 13.6% | 13.6% | 13.6% | 13.8% |
| South Africa | 18.4% | 19.5% | 20.3% | 20.7% | 5.1% | 5.9% | 6.6% | 7% | 15% | 38% | 17.4% | 17.2% | 17.1% | 17.0% |
| Turkey | 15.6% | 17.2% | 15.6% | 16.1% | 5.9% | 7.0% | 9.0% | 9% | 12% | -36% | 12.4% | 13.0% | 12.9% | 12.7% |
| Asia | 11.9% | 12.1% | 12.1% | 13.9% | 4.6% | 4.9% | 4.2% | 4% | 9% | 4% | 9.5% | 9.4% | 9.4% | 1.0% |
| China (A-shares) | 11.4% | 11.1% | 10.8% | | 5.1% | 5.4% | | 4% | 7% | -5% | 6.6% | 6.8% | 6.9% | 0.0% |
| China (H-shares) | 11.6% | 11.2% | 10.8% | | 6.2% | 6.5% | | 8% | 14% | 7% | 11.2% | 11.6% | 12.0% | 0.0% |
| India | 13.9% | 16.7% | 18.1% | | 0.7% | 0.9% | | -2% | 6% | 7% | 14.1% | 11.8% | 10.8% | |
| Indonesia | 14.6% | 16.3% | 17.5% | 17.5% | 3.5% | 4.0% | 4.4% | 5% | 8% | 8% | | | | |
| Philippines | 9.1% | 10.0% | 11.6% | 12.6% | 2.2% | 2.8% | 3.3% | 9% | 10% | 14% | | | | |
| Taiwan | 12.8% | 11.5% | 11.7% | 10.9% | 3.7% | 4.0% | 4.6% | 4% | 5% | 55% | 10.1% | 10.1% | 10.0% | 8.9% |
| Thailand | 7.8% | 8.2% | 8.3% | 8.9% | 2.8% | 3.1% | 3.5% | 16% | 16% | 10% | | | | |
| Europe (incl. Greece) | 10.6% | 9.5% | 10.3% | 10.8% | 5.0% | 5.5% | 6.0% | 8% | 15% | 42% | 15.7% | 15.1% | 14.9% | 14.9% |
| CIS | 23.9% | 20.9% | 19.6% | 19.3% | 9.3% | 9.8% | 11.1% | -1% | -8% | 15% | 13.9% | 14.1% | 14.6% | 15.2% |
| CEEMEA | 16.4% | 17.5% | 18.0% | 18.3% | 4.6% | 5.1% | 5.7% | 5% | 8% | 44% | 15.4% | 15.4% | 15.4% | 15.6% |
| GEM | 13.1% | 13.5% | 13.6% | 17.5% | 4.7% | 5.0% | 5.6% | 5% | 9% | 11% | 10.7% | 10.6% | 10.6% | 8.7% |
| GEM (ex China and India) | 15.7% | 16.6% | 17.1% | 17.5% | 4.5% | 5.0% | 5.6% | 7% | 9% | 33% | 14.6% | 14.5% | 14.6% | 15.0% |

*Source: FactSet, Thomson Reuters, Goldman Sachs Global Investment Research.*

*All price target timeframes are 12 months*

All price target timeframes are 12 months

Source: FactSet, Thomson Reuters, Goldman Sachs Global Investment Research

# Disclosure Appendix

## Reg AC

We, Waleed Mohsin and Mikhail Butkov, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

## GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our coverage universe) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

**Growth** is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

## M&A Rank

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

## Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

## Disclosures

## Financial Advisory Disclosure

Goldman Sachs and/or one of its affiliates is acting as a financial advisor in connection with an announced strategic matter involving the following company or one of its affiliates: National Bank Of Greece S.a.

**The rating(s) for Alpha Services and Holdings, Eurobank Holdings, National Bank of Greece and Piraeus Financial Holdings is/are relative to the other companies in its/their coverage universe:** Absa Group Ltd., Abu Dhabi Commercial Bank, Akbank, Al-Rajhi Bank, Alinma Bank, Alpha Services and Holdings, Arab National Bank, Banque Saudi Fransi, Capitec Bank Holdings, Commercial Bank of Qatar, Commercial Intl Bank Egypt, Doha Bank, Dubai Financial Market, Dubai Islamic Bank, Emirates NBD, Eurobank Holdings, First Abu Dhabi Bank, Firstrand Ltd., Investec Plc, National Bank of Greece, National Bank of Kuwait, Nedbank Group, Piraeus Financial Holdings, Qatar Islamic Bank, Qatar National Bank, Riyad Bank, Saudi British Bank, Saudi National Bank, Standard Bank Group, Turkiye Garanti Bankasi, Turkiye Halk Bankasi AS, Turkiye Isbankasi, Turkiye Vakiflar Bankasi, Yapi Kredi

## Company-specific regulatory disclosures

The following disclosures relate to relationships between The Goldman Sachs Group, Inc. (with its affiliates, "Goldman Sachs") and companies covered by the Global Investment Research Division of Goldman Sachs and referred to in this research.

Goldman Sachs beneficially owned 1% or more of common equity (excluding positions managed by affiliates and business units not required to be aggregated under US securities law) as of the month end preceding this report: Alpha Services and Holdings (€1.43), Eurobank Holdings (€1.14) and Piraeus Financial Holdings (€1.59)

Goldman Sachs has received compensation for investment banking services in the past 12 months: Alpha Services and Holdings (€1.43), Eurobank Holdings (€1.14) and Piraeus Financial Holdings (€1.59)

Goldman Sachs expects to receive or intends to seek compensation for investment banking services in the next 3 months: Alpha Services and Holdings (€1.43), Eurobank Holdings (€1.14), National Bank of Greece (€3.78) and Piraeus Financial Holdings (€1.59)

Goldman Sachs had an investment banking services client relationship during the past 12 months with: Alpha Services and Holdings (€1.43), Eurobank Holdings (€1.14), National Bank of Greece (€3.78) and Piraeus Financial Holdings (€1.59)

Goldman Sachs had a non-securities services client relationship during the past 12 months with: Alpha Services and Holdings (€1.43), Eurobank Holdings (€1.14), National Bank of Greece (€3.78) and Piraeus Financial Holdings (€1.59)

Goldman Sachs has managed or co-managed a public or Rule 144A offering in the past 12 months: Alpha Services and Holdings (€1.43)

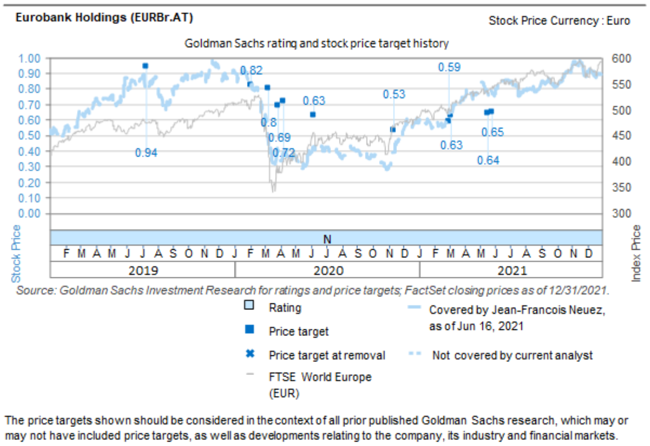
## Distribution of ratings/investment banking relationships

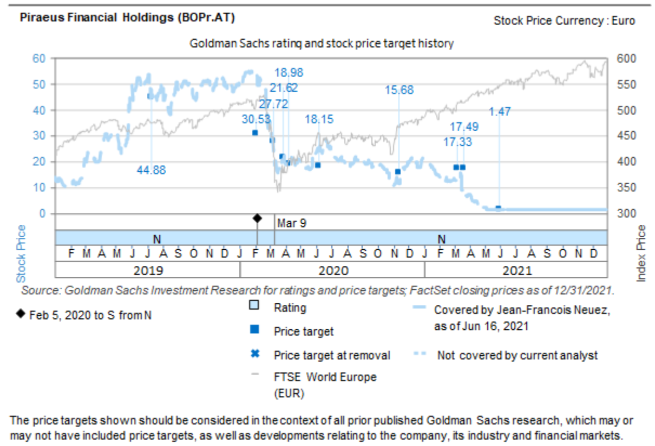
Goldman Sachs Investment Research global Equity coverage universe

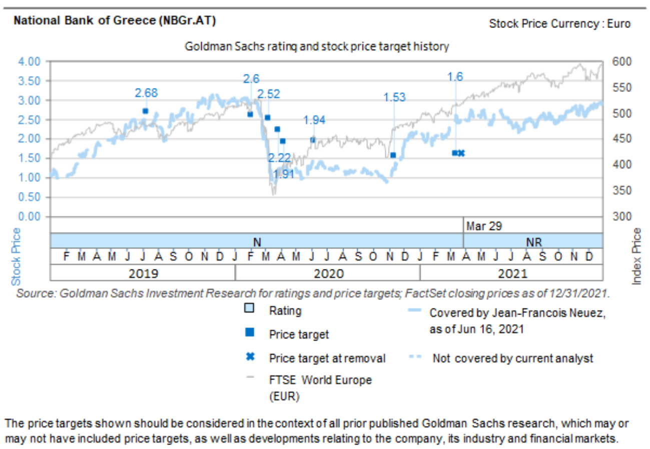
| | Rating Distribution | | | Investment Banking Relationships | | |
|---|---|---|---|---|---|---|
| | Buy | Hold | Sell | Buy | Hold | Sell |
| Global | 50% | 35% | 15% | 65% | 57% | 47% |

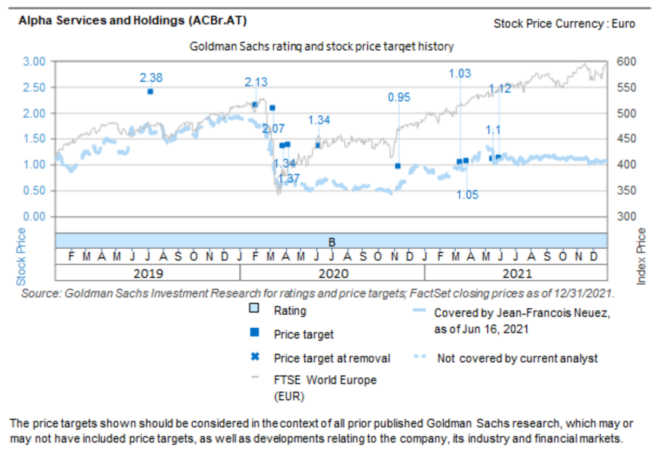
As of January 1, 2022, Goldman Sachs Global Investment Research had investment ratings on 3,096 equity securities. Goldman Sachs assigns stocks as Buys and Sells on various regional Investment Lists; stocks not so assigned are deemed Neutral. Such assignments equate to Buy, Hold and Sell for the purposes of the above disclosure required by the FINRA Rules. See 'Ratings, Coverage universe and related definitions' below. The Investment Banking Relationships chart reflects the percentage of subject companies within each rating category for whom Goldman Sachs has provided investment banking services within the previous twelve months.

## Price target and rating history chart(s)




## Regulatory disclosures

### Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

**Distribution of ratings:** See the distribution of ratings disclosure above. **Price chart:** See the price chart, with changes of ratings and price targets in prior periods, above, or, if electronic format or if with respect to multiple companies which are the subject of this report, on the Goldman Sachs website at https://www.gs.com/research/hedge.html.

### Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of the Global Investment Research Division of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. **Brazil:** Disclosure information in relation to CVM Resolution n. 20 is available at https://www.gs.com/worldwide/brazil/area/gir/index.html. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** Goldman Sachs Canada Inc. is an affiliate of The Goldman Sachs Group Inc. and therefore is included in the company specific disclosures relating to Goldman Sachs (as defined above). Goldman Sachs Canada Inc. has approved of, and agreed to take responsibility for, this research report in Canada if and to the extent that Goldman Sachs Canada Inc. disseminates this research report to its clients. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

**European Union and United Kingdom:** Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at https://www.gs.com/disclosures/europeanpolicy.html which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

**Japan:** Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan and Type II Financial Instruments Firms Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

## Ratings, coverage universe and related definitions

**Buy (B), Neutral (N), Sell (S)** Analysts recommend stocks as Buys or Sells for inclusion on various regional Investment Lists. Being assigned a Buy or Sell on an Investment List is determined by a stock's total return potential relative to its coverage universe. Any stock not assigned as a Buy or a Sell on an Investment List with an active rating (i.e., a stock that is not Rating Suspended, Not Rated, Coverage Suspended or Not Covered), is deemed Neutral. Each region's Investment Review Committee manages Regional Conviction lists, which represent investment recommendations focused on the size of the total return potential and/or the likelihood of the realization of the return across their respective areas of coverage. The addition or removal of stocks from such Conviction lists do not represent a change in the analysts' investment rating for such stocks.

**Total return potential** represents the upside or downside differential between the current share price and the price target, including all paid or anticipated dividends, expected during the time horizon associated with the price target. Price targets are required for all covered stocks. The total return potential, price target and associated time horizon are stated in each report adding or reiterating an Investment List membership.

**Coverage Universe:** A list of all stocks in each coverage universe is available by primary analyst, stock and coverage universe at https://www.gs.com/research/hedge.html.

**Not Rated (NR).** The investment rating, target price and earnings estimates (where relevant) have been suspended pursuant to Goldman Sachs policy when Goldman Sachs is acting in an advisory capacity in a merger or in a strategic transaction involving this company, when there are legal, regulatory or policy constraints due to Goldman Sachs' involvement in a transaction, and in certain other circumstances. **Rating Suspended (RS).** Goldman Sachs Research has suspended the investment rating and price target for this stock, because there is not a sufficient fundamental basis for determining an investment rating or target price. The previous investment rating and target price, if any, are no longer in effect for this stock and should not be relied upon. **Coverage Suspended (CS).** Goldman Sachs has suspended coverage of this company. **Not Covered (NC).** Goldman Sachs does not cover this company. **Not Available or Not Applicable (NA).** The information is not available for display or is not applicable. **Not Meaningful (NM).** The information is not meaningful and is therefore excluded.

## Global product; distributing entities

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs on a global basis.

Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by either Goldman Sachs Canada Inc. or Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Effective from the date of the United Kingdom's departure from the European Union and the European Economic Area ("Brexit Day") the following information with respect to distributing entities will apply:

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

**European Economic Area:** GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland, Portugal, the Republic of Cyprus and the Republic of Ireland; GS -Succursale de Paris (Paris branch) which, from Brexit Day, will be authorised by the French Autorité de contrôle prudentiel et de resolution ("ACPR") and regulated by the Autorité de contrôle prudentiel et de resolution and the Autorité des marches financiers ("AMF") disseminates research in France; GSI - Sucursal en España (Madrid branch) authorized in Spain by the Comisión Nacional del Mercado de Valores disseminates research in the Kingdom of Spain; GSI - Sweden Bankfilial (Stockholm branch) is authorized by the SFSA as a "third country branch" in accordance with Chapter 4, Section 4 of the Swedish Securities and Market Act (Sw. lag (2007:528) om värdepappersmarknaden) disseminates research in the Kingdom of Sweden; Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research in the Federal Republic of Germany and those jurisdictions within the European Economic Area where GSI is not authorised to disseminate research and additionally, GSBE, Copenhagen Branch filial af GSBE, Tyskland, supervised by the Danish Financial Authority disseminates research in the Kingdom of Denmark; GSBE - Sucursal en España (Madrid branch) subject (to a limited extent) to local supervision by the Bank of Spain disseminates research in the Kingdom of Spain; GSBE - Succursale Italia (Milan branch) to the relevant applicable extent, subject to local supervision by the Bank of Italy (Banca d'Italia) and the Italian Companies and Exchange Commission (Commissione Nazionale per le Società e la Borsa "Consob") disseminates research in Italy; GSBE - Succursale de Paris (Paris branch), supervised by the AMF and by the ACPR disseminates research in France; and GSBE - Sweden Bankfilial (Stockholm branch), to a limited extent, subject to local supervision by the Swedish Financial Supervisory Authority (Finansinpektionen) disseminates research in the Kingdom of Sweden.

## General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by our Global Investment Research Division. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (https://www.sipc.org).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

The analysts named in this report may have from time to time discussed with our clients, including Goldman Sachs salespersons and traders, or may discuss in this report, trading strategies that reference catalysts or events that may have a near-term impact on the market price of the equity securities discussed in this report, which impact may be directionally counter to the analyst's published price target expectations for such stocks. Any such trading strategies are distinct from and do not affect the analyst's fundamental equity rating for such stocks, which rating reflects a stock's return potential relative to its coverage universe as described herein.

We and our affiliates, officers, directors, and employees, excluding equity and credit analysts, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at https://www.theocc.com/about/publications/character-risks.jsp and https://www.fiadocumentation.org/fia/regulatory-disclosures_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

**Differing Levels of Service provided by Global Investment Research:** The level and types of services provided to you by the Global Investment Research division of GS may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to https://research.gs.com.

Disclosure information is also available at https://www.gs.com/research/hedge.html or from Research Compliance, 200 West Street, New York, NY 10282.