Box 2.1

EUROPEAN AND US BANKS: DIFFERENCES IN STOCK MARKET VALUATIONS AND PROFITABILITY

At the beginning of September, the main listed European banks had an average price-to-book (P/B) ratio of 0.7, compared with a P/B ratio of 1.3 for the main listed US banks.[1] These valuation differences are not a reflection of the present situation as they have been persistent since the global financial crisis. Indeed, at the start of the crisis, both the European and the US banks posted a P/B ratio of 2. From then (2007-08) until March 2009, the P/B ratio fell sharply to 0.5, tracking a similar path in both samples, before subsequently embarking on a recovery that was much more pronounced in the United States. Thus, since 2010 and more clearly since 2011, average P/B ratios in the United States have been higher. They converged somewhat in 2014-15, but the gap has then widened again since 2016. The differences in P/B ratios are not confined to the average of the two samples; the distributions are statistically different in the periods 2011-14 and 2016-19 (see Chart 1).

The numerator of the P/B ratio reflects the valuation made by banks' investors. This will depend on their expectations as to banks' future profitability, the level of risk-free interest rates and the risk premium demanded by them.

By contrast, the denominator of the P/B ratio reflects banks' book value, providing investors with useful information according to criteria that may be different from market value, including other principles (accounting prudence, stable valuation, etc.) that are not strictly based on market expectations. The fact that the P/B ratio of European banks has been persistently below 1 since 2009 implies that investors' expectations of their value have been systematically lower than their value reflected by the accounting standards. By contrast, since the second half of 2009, the P/B ratio of US banks has been above 1, indicating that expectations as to the value of bank shares are higher than the values reflected in the accounting records.

It is to be expected that investors formulate their expectations based, among other elements, on the financial information available at the time. This has given rise to a number of studies that establish a relationship between the P/B ratio and various financial ratios based on banks' accounting statements.[2] This box focuses on analysis of the relationship between banks' P/B ratio, which reflects expected profitability, and their current profitability. Chart 2 shows, for 2018 which is the last full year for which

Chart 1
P/B RATIO OF MAIN LISTED EUROPEAN AND US BANKS, 2007-2019 (a)

KOLMOGOROV–SMIRNOV TEST (right-hand scale)   EUROPE   USA
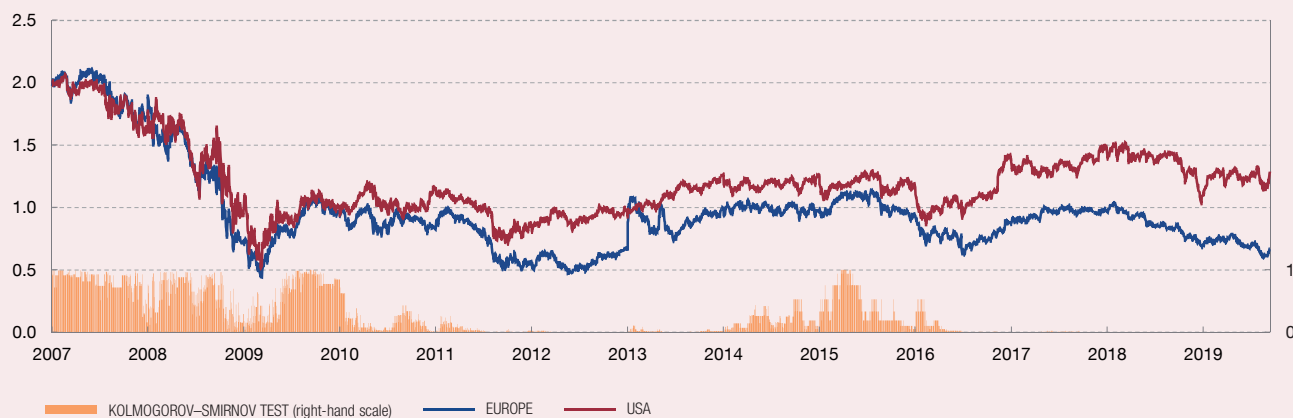
SOURCES: Datastream and Banco de España.

a For each date, the chart shows the simple average of the P/B ratio for the samples of the main listed European and US banks (27 in each case), and the p-value of a non-parametric Kolmogorov-Smirnov test on the equality of the distributions of the P/B ratio in both samples. A p-value below 0.1 denotes rejection of the null hypothesis of equality of distributions.

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1 Based on two samples – one for the United States and one for Europe – of the 27 banks with the highest market cap in each area.

2 Some recent examples include: C. W. Calomiris and D. Nissim (2014), Journal of Financial Intermediation, 23, pp. 400-435; B. Bogdanova, I. Fender and E. Takáts (2018), BIS Quarterly Review; and M. Grodzicki, C. Rodriguez d'Acri and D. Vioto (2019), ECB Financial Stability Review, May 2019.

data are available, that there is a positive relationship between return on equity (ROE) and the P/B ratio. It also shows, in almost all cases, that both ROE and the P/B ratio are higher at US banks than at their European counterparts. Accordingly, the banks with the highest current profitability in 2018 seem to be associated with higher expectations of discounted future profitability with respect to present book value.

Chart 3 shows the regression coefficients of the ROE ratio, as an explanatory factor of the P/B value ratio, in a series of cross-sectional regressions from 2007 to 2018, separating the European and US samples. The positive relationship between ROE and the P/B ratio observed in Chart 2 for 2018 is not confined to that year, as the coefficients are generally positive and significant for the different years, albeit not stable over time. With the onset of the crisis, the ROE coefficient for the European sample decreases significantly compared with that estimated for 2007 (0.04), up to 2017 and 2018 when it rises to 0.05 and 0.08, respectively. The coefficient is almost zero both in 2008 and 2012, when the financial crisis in Europe was at its peak and support measures were approved for the banking and the sovereign sector.[3] The coefficient is generally higher for US banks (0.06 on average) than for European banks (0.03 on average) and also varies over time. After dropping to a zero non-significant level in 2009, the year in which the Troubled Asset Relief Program (TARP) was implemented, it has held above its pre-crisis levels and above the levels of European banks.

In accordance with these findings, the relationship between actual profitability and the P/B ratio is stronger for the United States in the geographical dimension, and for recent periods in the time dimension. This may be because investors perceive that current ROE has greater predictive power over future profitability, or because there is greater emphasis on short-term profitability. Correlation analysis does not permit distinction between the two explanations. In any event, it is important to note that in the years when critical support measures were approved for the banking sector, a disconnection between the two variables is observed.

Given the existence of this relationship, the next step is to analyse how this profitability measure for the main European and US banks has evolved in the period. Chart 4 depicts the change in the ROE ratio in the two samples and shows how the initial stage of the crisis prompted a sharp slump in profitability in 2008. This was followed by a subsequent recovery up to 2010, as support measures for the banking sector were implemented in both areas, financial stress eased and activity recovered somewhat. From 2010 the paths began to diverge, with US banks recording a steady ROE ratio around 8%, compared with the much lower and more volatile level recorded by European banks. Indeed, their ROE fell significantly in 2016 and especially in 2012, against the backdrop of the sovereign crisis and the renewed economic downturn. As was observed in Chart 1, there is a clear time parallel in the paths of the P/B ratio in the United States and Europe.

The differences in profitability between the European and US banks in terms of ROE are greater if measured by return on total assets (ROA), owing to the differences in their leverage ratios (equity to total assets): the banks in the European sample had a leverage ratio of 6% in 2018, compared with 10.6% for the US banks (see Chart 5). ROA, which may be decomposed as the product of ROE and the leverage ratio, is higher for the US banks, as both ROE and the leverage ratio are lower in Europe. In terms of ROA, not only is there a positive difference in favour of the US banks in net income in the numerator, but the total assets of the European banks in the sample are considerably higher than those of their US counterparts,[4] thus driving down this ratio for the European sample.

In an attempt to investigate the causes of these differences in profitability aside of the level of leverage, Chart 5 also shows the income statement breakdown (in terms of total assets) of the banks in the US and the European samples for 2018. As the chart shows, the key factors for US banks' higher profitability are their greater capacity to generate net income, through net interest income (2.1% in the United States compared with 1.2% in Europe) and through service fees and gains/losses on financial transactions that make up gross income (2% compared with 1%).

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3   See, for example, ECB Financial Stability Review, December 2008, Special Feature, "Recent Policy Initiatives to Strengthen the Resilience of the Financial System", pp. 129-134; and ECB Financial Stability Review, December 2012, Chapter 3 on Financial Markets.

4   There are various reasons for this difference, including the different treatment of the scope of consolidation, especially as regards securitisations.

Box 2.1

EUROPEAN AND US BANKS: DIFFERENCES IN STOCK MARKET VALUATIONS AND PROFITABILITY (cont'd)

Chart 2
RELATIONSHIP IN 2018 BETWEEN P/B RATIO (VERTICAL AXIS) AND ROE
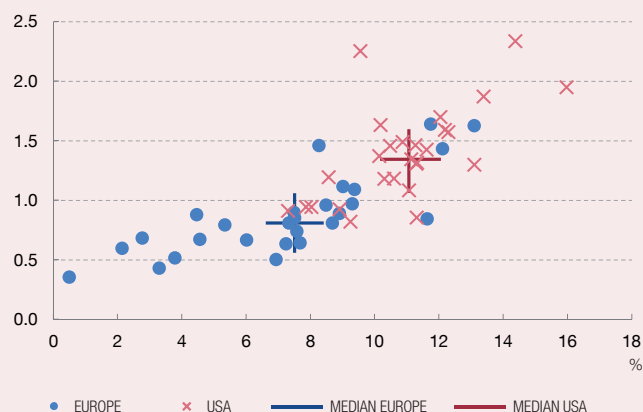(HORIZONTAL AXIS) OF MAIN LISTED EUROPEAN AND US BANKS (a)

- EUROPE   × USA   — MEDIAN EUROPE   — MEDIAN USA

Chart 3
EFFECT OF ROE ON P/B OF MAIN LISTED EUROPEAN AND US BANKS (b)

- COEFFICIENT EUROPE
- COEFFICIENT USA
- THRESHOLD 10% OF SIGNIFICANCE (right-hand scale)
- P-VALUE DIFFERENCE TEST (right-hand scale)
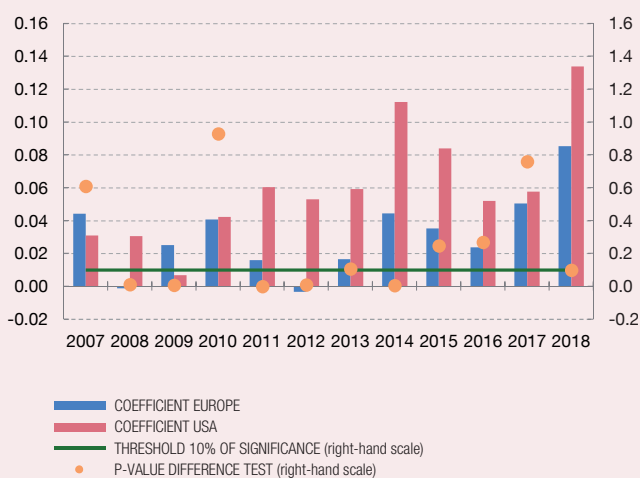
Chart 4
PROFITABILITY (ROE) OF MAIN LISTED EUROPEAN AND US BANKS

- EUROPE   — USA
- AVERAGE EUROPE   — AVERAGE USA
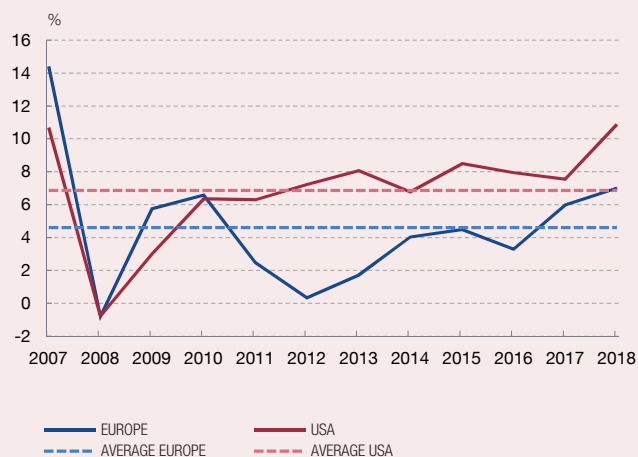
Chart 5
STRUCTURE OF 2018 INCOME STATEMENT AND LEVERAGE
RATIO OF MAIN LISTED EUROPEAN AND US BANKS (c)

- FINANCIAL REVENUE
- FINANCIAL COSTS
- REST OF GROSS INCOME
- OPERATING EXPENSES
- IMPAIRMENT LOSSES
- OTHER INCOME
- ◆ NET INCOME
- LEVERAGE RATIO (right-hand scale)
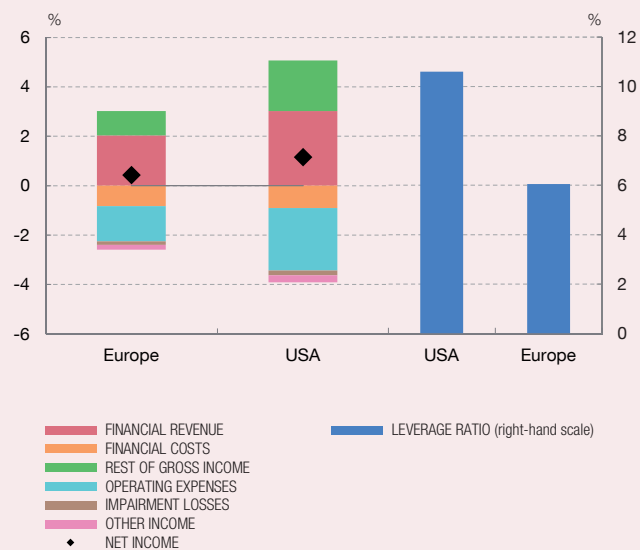
SOURCES: Datastream, SNL and Banco de España.

a The chart depicts the average P/B ratio in 2018 (vertical axis) and ROE in 2018 (horizontal axis) of the 54 banks making up the two samples. The crosses denote the median values of P/B and ROE of the European and US banks.

b For each year of the period 2007-2018, a cross-sectional regression is made: $P/B_i = \alpha_{USA} \times I_{USA} + \alpha_{EUR} \times I_{EUR} + \beta_{USA} \times ROE_i \times I_{USA} + \beta_{EUR} \times ROE_i \times I_{EUR} + \varepsilon_i$ where P/B_i and ROE_i are the price-to-book and ROE ratios of bank i, I_{USA} and I_{EUR} denote that they belong to either the US or the European sample, α_{USA} and α_{EUR} are constants corresponding to the samples of European and US banks, and β_{USA} and β_{EUR} are the coefficients of the ROE effect corresponding to the samples of European and US banks. The identity of the coefficients is examined by means of a null hypothesis test (H_0: $\beta_{USA} = \beta_{EUR}$) based on the F statistic. The orange markers in the chart denote the p-values. The standard errors used are robust to heteroskedasticity. The coefficients β_{USA} and β_{EUR} are individually significant in all the regressions, except in 2008 for Europe and in 2009 for the United States.

c The left-hand side of the chart depicts the income statement breakdown in terms of total assets of the main European and US banks. The righthand side presents the leverage ratio, defined as equity to total assets.

This capacity to generate income more than offsets their higher operating expenses (2.5% compared with 1.4%) and the absence of significant differences in impairment losses and other income. Adverse factors that have marred European banks' profitability since the start of the crisis, such as the declining volume of productive assets, falling net interest income and business models with a low share of net income other than net interest income, would appear to be still contributing in 2018 to the lower profitability of the main listed European banks in comparison with their US counterparts.

The analysis presented here shows that the differences in stock market valuations between US and European banks that emerged after the financial crisis of 2008 are still in place. It also identifies signs that additional recovery in European banks' profitability would help close the valuation gap. However, this improved profitability should not be achieved at the expense of sacrificing a prudent funding structure (for instance, by taking on excess leverage), as this would drive up the risk premia demanded by investors and thus limit improvements in P/B ratios.