Staff memo

How high is the cost of equity for Sweden's major banks?

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June 2026

Contents

Summary

How profitable are the major Swedish banks in relation to the equity market's required rate of return? In this analysis, we examine this by comparing the banks' return on equity with a market-based required rate of return on equity.

The results show that the major Swedish banks have achieved a return on equity that, on average, has exceeded the equity market's required return. From a financial stability perspective, this suggests that the banks have demonstrated a strong earnings capacity relative to the risk that the market assesses their operations to entail. This creates favourable conditions for the banks to absorb losses, maintain strong capital ratios and sustain lending even during periods of stress. During the period studied, the banks have also been able to maintain strong capital ratios while making dividend payments and share buybacks.

The estimates are method-dependent and sensitive to assumptions. However, two different measures both indicate that the banks' returns on equity have exceeded the market's required return, which strengthens the robustness of the results. Together, they offer a useful perspective on banks' costs of equity and can help nuance the discussion of bank profitability.

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[1] The authors would like to express their sincere thanks to everyone who has contributed to this analysis in various ways through valuable comments, discussions and feedback. Any remaining errors or shortcomings are our own.

1 Profitable banks matter for financial stability

1.1 Profitability is important for banks' resilience

Bank profitability is of central importance to financial stability and the supply of credit in the economy. Profitable banks are better placed to meet regulatory capital requirements, to build and maintain management buffers, to manage credit losses and to maintain their lending to the public even in difficult times.[2] Strong profitability thus contributes to strengthening the banks' ability to withstand and manage shocks and thereby reduces the risk that problems in the banking system will have broad consequences for the real economy.[3]

In practice, banks' profitability is often measured using key ratios such as ROE (return on equity), which measures the return on equity. This metric indicates how much profit the bank generates in relation to its equity. As equity belongs to the shareholders, ROE can be said to show how well the bank manages the money that shareholders have invested in it. However, the measure provides a limited picture of what profitability means for financial stability. A high ROE may, for example, reflect that the bank has a strong earnings capacity, but it may also reflect that the bank is taking substantial risks in its operations. In order to assess whether profitability is sufficient in relation to risk, it must therefore be compared with the bank's cost of equity, that is, the return that investors require to invest in the bank's shares given the risk associated with the bank's operations, and by, extension, the shareholding.[4] The cost of equity thus serves as a benchmark for determining whether the bank generates an economic surplus in addition to the return that investors require as compensation for bearing risk.

Comparing ROE against the cost of equity is important when valuing companies in all sectors, but particularly for banks, as risk-taking is a central part of their business model. Credit risk is a clear example. Expected credit losses are a recurring cost that must be covered by the pricing of loans and other commitments, while unexpected losses are charged to the bank's equity and should be absorbable by its capital buffers. If the bank's profitability over time exceeds the cost of equity, it is better placed to build up capital over time. This also strengthens the bank's ability to cover unexpected losses, for example in a stressed macroeconomic scenario, without risking a breach of the combined buffer requirements. However, the extent to which profitability contributes to resilience also depends on how profits are used. Dividends, for

[2] The management buffer consists of voluntary additional loss-absorbing capital that the bank chooses to hold in excess of the Financial Supervisory Authority's capital requirements. The aim is to reduce the risk of breaching capital requirements as a result of normal fluctuations in the capital base and capital requirements. The size of the buffer is normally assessed by balancing return and risk.

[3] See Altavilla et al. (2021) and Girotti and Horny (2020).

[4] The terms cost of equity and required rate of return are used here as two sides of the same economic entity. From the investors' perspective, it is the return they require to hold the bank's shares given the risk. For the bank, the same requirement is a cost (of equity), as the bank needs to generate a return that meets investors' requirements for equity to be an attractive source of funding.

example, can contribute to efficient capital allocation by channelling surplus capital to other parts of the economy where it can be put to better use. From a stability perspective, however, strong profitability allows banks to retain part of their profits to strengthen their capital base, increase lending, adjust their management buffers to changing risks or make other investments.

The literature does not provide a clear picture of the relationship between banks' profitability and financial stability. Some studies find that high and stable profitability over time can reduce systemic risks in the banking sector. This does not necessarily occur because banks always have more capital as such, but because they then have a greater capacity to generate capital and absorb losses without having to tighten the credit supply during periods of stress.[5] One way of describing this is that profitability should be *sustainable* and act as a dynamic buffer.[6] Other studies suggest that periods of high profitability often coincide with more favourable financial conditions, such as low funding costs, rising asset prices and increased risk appetite. In such environments, banks may increase their financial risk-taking, which can contribute to the build-up of cyclical systemic risks and other vulnerabilities. When macroeconomic conditions deteriorate, these vulnerabilities can materialise in the form of large losses that give rise to negative effects for both the banking system and society at large.[7]

1.2 Profitability is affected by many different factors

Another aspect of banks' profitability is the competitive environment. If profitability remains high over a prolonged period, this may be a sign that competition in the banking sector is limited. This can give banks greater scope, for example, to keep lending rates to households and businesses at a higher level than a more competitive market would have allowed.[8] For households and businesses, this may translate to higher interest expenses and less favourable lending conditions.

In theory, high profits in a particular market should attract new entrants, thereby driving down margins and profitability over time. In practice, however, such an adjustment may be hampered by structural factors like different barriers to entry, significant economies of scale and scope, and regulations that may restrict new entrants, even if they are justified on stability grounds. This contributes to sustaining high profitability for longer than would be expected in a market with effective competition.

Empirical analyses do not provide a clear-cut picture of how well competition functions in the Swedish banking market compared with other countries. Several factors suggest that it functions relatively well. For example, Sweden is assessed as having relatively high customer mobility and low costs for switching banks compared with many other countries.[9] Swedish banks also have lower operating costs than banks in comparable EU countries, which may give them scope to offer more competitive

[5] See Xu et al. (2019) and the ECB (2024).

[6] See speech by Claudia Buch, *"Bank profitability: a mirror of the past, creating a vision for the future"*, 16 October 2024, ECB.

[7] See Martynova et al. (2015), Xu et al. (2019) and the ECB (2024).

[8] See Carletti et al. (2024).

[9] See Copenhagen Economics (2025).

prices. Such factors are usually considered to promote competition. At the same time, the Swedish banking market is concentrated among a few large players, which, combined with economies of scale, can create barriers to effective competition in certain product segments, for example in payment services and financial infrastructure.[10] Customer mobility in, for example, the mortgage market varies across different household groups. Mortgage borrowers with larger mortgaged and higher incomes, for instance, switch banks more often than others, while many customer who do not switch banks state that switching would take too much time and effort.[11]

Banks' profitability is also affected by structural factors that are not necessarily related to competition. One such factor is the composition of their assets and liabilities. Today, lending to households accounts for around two-thirds of banks' Swedish exposures, with mortgages accounting for a significant share, and a large proportion of corporate lending consists of lending to property companies. Such lending, which primarily secured by real estate, normally entails lower expected credit losses than unsecured lending. This can contribute to banks' credit losses normally being low and thus to high reported profitability.[12] However, this does not necessarily mean that banks are making unusually large profits in relation to the risk they take. Lower credit risk should, in theory, also be reflected in lower interest margins and lower return requirements from investors.

The funding side also matters. Swedish banks have good access to deposits from households and businesses, a source of funding that is lacking in other sectors. Deposits are typically relatively cheap and stable as a source of funding and thus can contribute to a higher net interest income. The combination of a high proportion of secured lending and access to deposit funding can therefore contribute to high profitability even when interest margins on lending, for example, are small. Banks' funding costs may also be influenced by their specific role in the financial system. If investors expect the government to support systemically important banks in a crisis, this may reduce the risk premium demanded by investors and thereby also lower the banks' funding costs. This, in turn, may affect the market's valuation of the banks and, consequently, the required rate of return.[13]

Different types of regulation are another factor that can affect banks' profitability. One example is the risk weight floor for mortgages, which means that banks must hold a minimum level of capital regardless of what their internal models indicate regarding the actual risk in the mortgage portfolio. Such a requirement can reduce the reported return on the bank's equity, as this lending needs to be financed with more equity. At the same time, a higher proportion of equity means that the bank's leverage decreases, i.e. the bank needs to finance itself with debt to a lesser extent relative

[10] See, for example, the Swedish Competition Authority (2023) and the Swedish Financial Supervisory Authority (2025).

[11] See the Swedish Financial Supervisory Authority (2023).

[12] In Sweden, banks' credit losses as a proportion of their total lending amount to approximately 0.06 per cent, which is significantly lower than the EU average of 0.49 per cent. Furthermore, a larger proportion of loans lack underlying collateral than in Sweden. See Frykström et al. (2025).

[13] See, for example, FSB (2021), O'Hara and Shaw (1990), Acharya et al. (2016) and Finansinspektionen and the Swedish National Debt Office (2019), which show that implicit government guarantees can reduce the funding costs of systemically important banks.

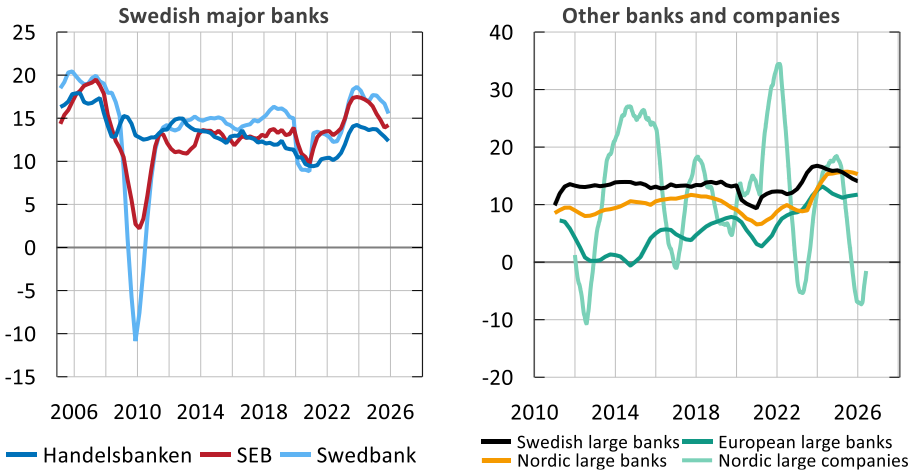
to its equity. This reduces the risk for shareholders and may therefore also lower their required rate of return. The risk weight floor, as well as other regulation, is therefore a way of making the banking system more resilient, with banks bearing a greater share of the risks that society might otherwise have to cover in a crisis situation.

1.3 Swedish banks' profitability is high compared with European banks

Figure 1 shows how the return on equity (ROE) has developed for the major Swedish banks Handelsbanken, SEB and Swedbank (left) and for selected peer groups (right). As shown in the figures, banks' return on equity has been relatively stable over a long period and has fluctuated less compared with other listed companies. Since 2005, the average return on equity has been around 13 per cent for the Swedish major banks.

Figure 1. Return on equity

Per cent



Note: The major Swedish banks consist of Handelsbanken, SEB and Swedbank. The major Nordic banks consist of Nordea, DNB and Danske Bank. European banks comprise an equally weighted average of the following banks: BBVA, Banco Santander, Barclays, BNP Paribas, Commerzbank, Crédit Agricole, HSBC, Erste Group Bank, Intesa Sanpaolo, Lloyds, KBC Group, RBS, Société Générale, UBS and UniCredit. Refers to a four-quarter rolling average.

Sources: Banks' interim reports, Bloomberg and Macrobond.

In recent years, the return on equity of Sweden's major banks has been around 15 per cent, but it has gradually declined since 2024. From a historical perspective, however, the return remains high. The single most important explanation for the high profitability during the last couple of years is a rising net interest income in connection with the interest rate rise in 2023. Swedish banks have a large share of lending at variable interest rates, which means that higher market interest rates quickly feed through to their interest income. At the same time, deposit rates often rise more slowly than lending rates, allowing interest margins to increase rapidly. Since net interest income is the largest source of income for Swedish banks, this development has had a significant impact on profits.

The high profitability in recent years should also be viewed against the backdrop of the long period of low interest rates that preceded the rise in interest rates. While low interest rates certainly put pressure on the banks' interest margins, they simultaneously contributed to high demand for credit and as a result growth in their lending portfolios. When interest rates subsequently rose, net interest income improved rapidly while credit losses remained low. Furthermore, the major Swedish banks have contained cost growth over a long period, thereby improving the relationship between costs and income, as measured by the cost-to-income ratio (C/I ratio) and strengthening profitability.

Compared with other banks in Europe and the Nordic region, Swedish banks have a higher return on equity on average. One explanation is that Swedish banks generally have lower costs in relation to their income compared with banks in other European countries. European banks also have, and have historically had, a higher proportion of so-called non-performing loans on average. In addition to lost interest income, this also entails higher costs in the form of asset write-downs and therefore larger credit losses, which puts further pressure on profitability. Furthermore, many European banks are characterised by weak revenue diversification, with a heavy reliance on traditional interest income while revenue from, for example, fees and asset management is more limited. These factors are exacerbated by high levels of competition in several European countries.[14]

Structure of the analysis

In this Staff Memo, we examine how the observed profitability of the major Swedish banks compares with a market-based return on equity requirement. The required rate of return, which can also be described as the banks' cost of equity, is estimated on an annual basis using two different methods. The analysis begins with a description of how the required rate of return, i.e. the cost of equity, can be estimated using various models. We then carry out the estimation and compare it with the banks' observed profitability. Finally, the results are related to the banks' profits through a so-called residual profit approach. In this approach, we divide the profits into a portion corresponding to the cost of equity and a portion exceeding this. The latter portion is referred to as residual profits. The analysis thus provides a market-based perspective on the banks' profitability and should be viewed as a complement to other assessments of the banks' resilience.

[14] See *Financial Stability Review*, November 2019, European Central Bank.

2 The cost of equity can be estimated in various ways

To assess whether banks' profitability, measured as return on equity, is reasonable in relation to the risk they take, a reference point is needed for what can be regarded as a normal or market-based required return. One such reference point is the cost of equity, i.e. the required rate of return that investors can be assumed to demand based on the bank's risk profile. Unlike the cost of debt, which can largely be observed directly through banks' financing costs, the cost of equity is not directly observable but has to be estimated. One of the most fundamental methods for estimating it is presented below. An alternative method, used in the analysis as a complement, is presented in the appendix.

2.1 Factor models and CAPM

A very common method of estimating the cost of equity is to use so-called factor models. These models are fundamentally based on Markowitz's (1952) portfolio theory, in which investors are assumed to demand a higher expected return in order to bear a higher level of risk. In factor models, the focus is on systematic, or non-diversifiable, risk. This is the type of risk that is common to many or all assets in the market, such as economic cycles or changes in interest rates. Unlike unsystematic, or idiosyncratic, risk, which is specific to a particular type of company or sector, systematic risk cannot be diversified away by spreading investments across multiple assets.

To measure how sensitive an individual asset is to systematic risk, one examines how its return correlates with one or more risk factors. This is referred to as the asset's factor exposures. In practice, factor exposures are estimated through statistical analysis, often using a regression, where the asset's return is related to the return on one or more risk factors. Each risk factor is also associated with a risk premium. This can be interpreted as the extra return, above the risk-free rate, that investors require to bear a specific type of risk. Together, the factor exposures and risk premiums determine the expected return and thus the cost of the banks' equity.

One of the simplest factor models is the single-factor Capital Asset Pricing Model (CAPM), developed by Sharpe (1964), Lintner (1965) and Mossin (1966). According to CAPM, an asset's expected return is determined by the risk-free rate and a risk premium that depends on the asset's exposure to the common market risk. This exposure is measured by the beta, which captures how sensitive the asset's return is to movements in the market portfolio. A higher beta implies that the asset has higher systematic risk and should therefore also have a higher expected return, or a higher required rate of return. According to CAPM, an asset's (i) expected return is thus determined as follows:

$$E(r_i) = r_f + \beta_i\big(E(r_m) - r_f\big) \qquad (1)$$

where r_f represents the risk-free rate, β_i represents the beta of the asset i in question relative to the benchmark index, and $E(r_m) - r_f$ represents the expected market

risk premium. The asset's expected return, and thus the cost of equity, is a linear function of its systematic risk (market risk in the case of CAPM). The higher the beta, the more sensitive the asset's return is to market movements and the higher the return investors should demand to bear this risk.

In order to use expression (1), a number of input parameters are required. Firstly, a risk-free rate is needed to reflect the return investors can obtain on an alternative investment with no, or at least very low, risk. Secondly, an estimate of the market portfolio's expected return is required, which determines the market risk premium together with the risk-free rate. Thirdly, a measure of the asset's beta is required, which measures how sensitive the asset's return is to movements in the market portfolio's value and which thus determines how much of the market risk premium should be included in the required rate of return for the individual asset. The next section describes each of these components.[15]

Determining the risk-free rate

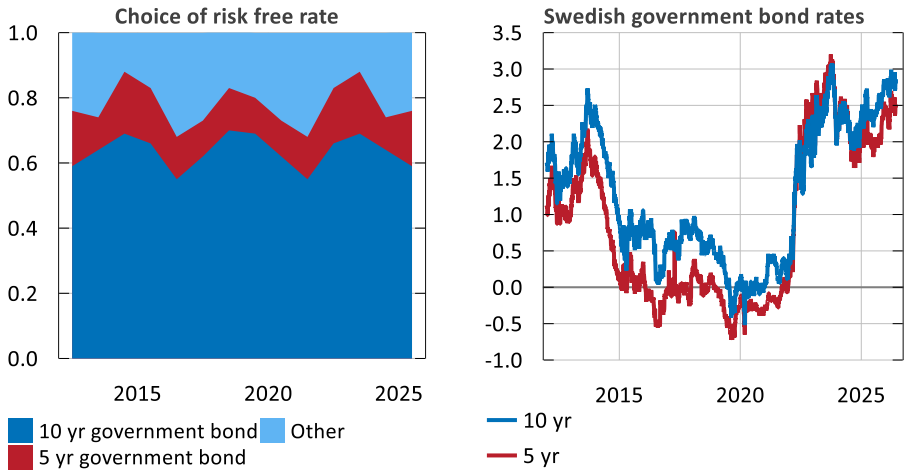
There is no predetermined choice of risk-free rate when calculating the required rate of return. The literature includes both short- and long-term government bond yields, as well as various forms of normalised reference rates. Empirical studies of market practice show, however, that the ten-year Swedish government bond yield is the most common choice among Swedish investors (seeFigure 2).[16] In this analysis, the ten-year Swedish government bond yield is therefore used as a measure of the risk-free rate.

[15] For a more detailed review of the limitations of CAPM, see, for example, Fama and French (2004) or Chen et al. (2022).

[16] According to PwC's Risk Premium Study 2025, just over 70 per cent of respondents in the survey use the 10-year Swedish government bond yield as the risk-free rate, while the remainder mainly use the 5-year government bond yield or a normalised rate.

Figure 2. Choice of risk-free rate for calculating the required rate of return and Swedish government bond yields

Proportion of responses, per cent



Note: The left-hand chart refers to the proportion of market participants who choose a specific yield as the risk-free rate. Survey participants include asset managers, venture capitalists, fund brokers and corporate finance advisers. The right-hand chart refers to benchmark bonds. Maturities may therefore vary from time to time.

Sources: PwC's Risk Premium Study (2012–2025) and Macrobond.

Determining the market risk premium

The market risk premium is the return that investors require in addition to the risk-free rate in order to invest in the broad stock market rather than in a risk-free asset. Here, return refers to the total return on the stock market, i.e. the sum of share price movements and dividends, and not the profit growth or return on equity of the companies concerned. Realised, i.e. historical, returns are usually used when determining the market risk premium in CAPM.[17] However, it is questionable whether historical returns are an appropriate estimate of investors' future required rates of return, which is the variable on which the model is based. This is particularly relevant in light of both the sharp stock market rallies in 2013, 2019 and 2022 and the low interest rate environment between 2015 and 2022. Investors are fundamentally forward-looking, and the purpose of estimating the market risk premium is to capture the required rate of return at the current point in time. Although investors' expectations can to some extent be regarded as adaptive – that is, influenced by historical returns – realised returns during the analysis period have at times been highly volatile. This has made it difficult to use them as a basis for a stable assessment of the required rate of return. Moreover, realised returns are influenced by changes in asset prices and valuations, and therefore do not necessarily reflect changes in the risk compensation demanded

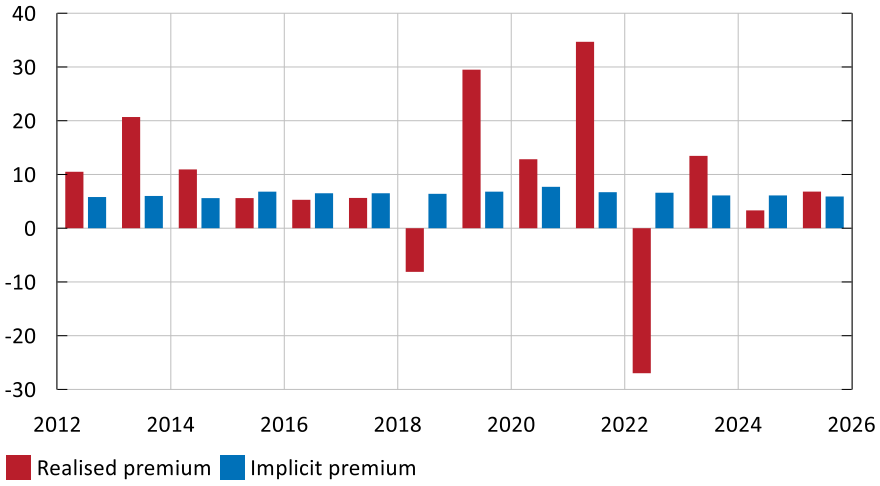
[17] See, for example, King (2009). Since the expected market risk premium is not observable, realised historical returns are used as a proxy in practice. By calculating the average excess return on the stock market relative to the risk-free rate over long periods, one obtains an empirical and well-established measure that is assumed to reflect investors' long-term expectations. King emphasises that short-term outcomes can deviate significantly from expectations, but that an average over long periods tends to smooth out temporary shocks or cyclical variations. For this reason, long historical time series are often used.

by investors. It may therefore be misleading to interpret high realised returns as an indication of a high market risk premium.

The estimate of the cost of equity in this analysis is based primarily on an *implicitly calculated market risk premium*, which is reported on an annual basis inFigure 3. This type of measure is used to capture investors' forward-looking required rates of return based on current share prices, assumptions about future dividends and the risk-free rate.[18] To put the analysis into perspective, the table also shows a market risk premium as it would have been calculated had it been based on actual, historical returns (ex post). The chart illustrates the difference between these two measures. The red bars show that the actual, historical return in excess of the risk-free rate has been volatile and, at times, very high. The average value of the implicitly calculated market risk premium, which reflects the market's ex ante pricing of required returns rather than actual outcomes, has been considerably more stable over time and has amounted to approximately 6 per cent over the last three years.

Figure 3. Annual return in excess of the risk-free rate (market risk premium) for the OMXSPI and the implicitly calculated market risk premium

Per cent



Note: The implied required rate of return has been calculated based on discounted future dividends for each company in the OMXS30 index. The estimate is based on the companies' observed market values and forecasts for future cash flows. The required rate of return is calculated as the discount rate that makes the present value of these cash flows equal to the market value. The market risk premium is then calculated as the difference between the market's required rate of return and the risk-free rate.

Sources: Macrobond, PwC and our own calculations.

Estimating beta values

The next step is to calculate the asset's exposure to the market portfolio, its *beta*. The beta value is a relative measure of risk that shows how sensitive an asset's return is to movements in the value of the market portfolio, often represented by a benchmark

[18] The implicitly calculated market risk premium is taken from PwC's Risk Premium Study (2025); see the appendix on page 17 of their report.

index. A beta of 1 means that the asset's return moves, on average, in line with the market portfolio's return. A beta of 1.5 means that the asset's return changes, on average, by 1.5 percentage points when the market's return changes by 1 percentage point. Assets with beta values greater than 1 are usually classified as high-beta assets, and assets with beta values less than 1 as low-beta assets.

As with the choice of risk-free rate in the required rate of return, there are various methods for determining the beta value. Generally, this is done by estimating a regression where the dependent variable is the historical return of the stock in question and the explanatory variable is the return of a broad market index. In this analysis, the Nasdaq OMX Stockholm PI index (OMXSPI) is used as the benchmark index for the main results. It comprises all shares listed on the Stockholm stock exchange. In certain contexts, it may be more appropriate to use a different market index as a benchmark, such as a foreign index or a global index. However, for the comparison to be valid, the benchmark index should include the relevant shares or at least reflect the market in which they are traded. In the case of the major banks, the vast majority of trading in their shares takes place on the Stockholm stock exchange, which is why a Swedish index is considered most appropriate.[19]

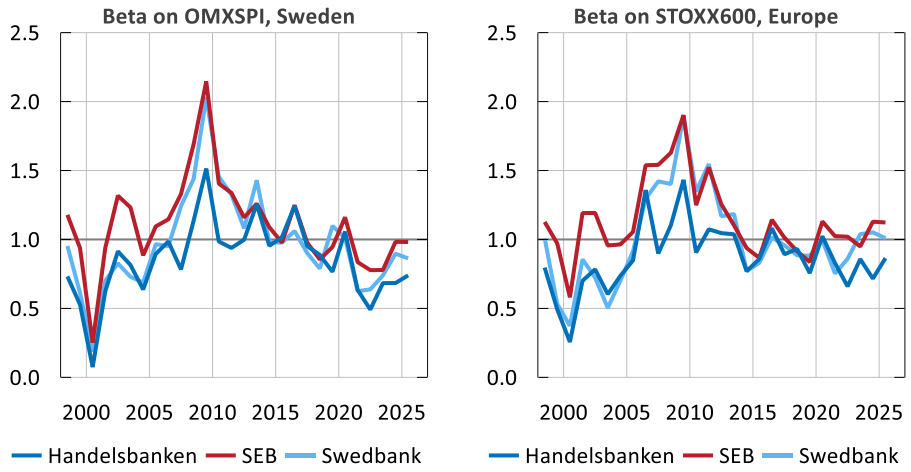
In this analysis, beta values are estimated using simple OLS regressions of the banks' daily returns relative to the market return, separately for each year. The estimates are typically based on around 250 trading days per year. Estimating annual beta values is well suited to the analysis, as we are estimating the banks' annual cost of equity.[20] The results of the beta estimates using a Swedish and a European benchmark index are showed inFigure 4 .

[19] A sensitivity analysis has been carried out using different benchmark indices. The results are similar in all cases. The European STOXX600 index and the US S&P500 result in slightly lower beta values than the Swedish market indices OMXSPI and OMXS30.

[20] The beta value has also been estimated in other ways, for example using rolling windows of various sizes. The results are similar to the annual estimates, but significantly more volatile.

Figure 4. Estimation of beta values relative to the Swedish and European stock markets for the major banks in Sweden

Beta



Note: The estimates are based on an annual OLS regression with each bank's share return as the dependent variable and the OMXSPI (left) and STOXX600 (right) as explanatory variables.

Sources: Macrobond and own calculations.

The chart shows that the three banks' estimated beta values are at slightly different levels and vary over time, but also that they exhibit clear common patterns. This suggests that changes in exposure to the market as a whole are largely driven by common factors rather than bank-specific ones. The clear peaks associated with the financial crisis of 2008–2009 illustrate that the banks' market exposure increases during periods of financial stress, which is in line with empirical findings regarding how bank shares covary with the broader stock market. Since the financial crisis, beta values have gradually declined and stabilised at levels close to 1. This can be interpreted as indicating that the risk of bank shares relative to the equity market has decreased over time. However, there are some small differences between individual banks.

A comparison of beta values estimated against the Swedish and European stock markets shows that the latter tends to yield slightly lower beta values. This is to be expected, as the major Swedish banks account for a relatively large proportion of the Swedish OMXSPI index. This may result in a higher correlation.[21] Compared with the STOXX600, which is comparatively more diversified and less bank-intensive than the OMXSPI, the estimated market exposure is slightly lower. This dynamic persists over time, meaning that the banks' market risk correlates strongly with broader European risk factors and not solely with Swedish conditions.

Finally, it should be noted that the beta values shown in the chart are annual estimates. This means that they reflect average market exposure over the respective years. Beta values estimated on a daily basis show considerably greater variation and

[21] When a stock is included in the benchmark index, its own price performance contributes to the index's return. The greater the weighting of the stock in the index, the stronger the link becomes, which can contribute to a higher estimated beta value. The weightings of the three major Swedish banks amount to approximately 2–3 per cent each of the OMXSPI.

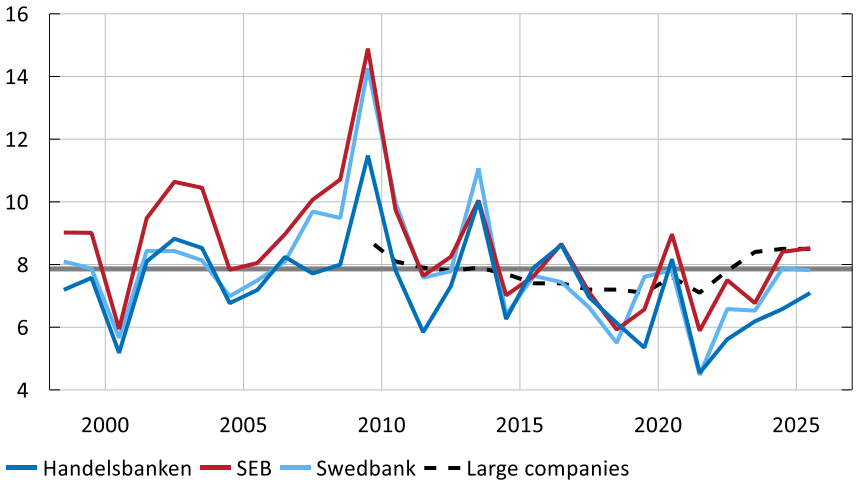
may, during periods of financial stress, have been significantly higher than indicated by the annual estimates.[22] In practice, this means that cost of equity estimated using annual beta values may underestimate the risk premium that investors demand in stressed market conditions. During such periods, both broad market risk and the perceived risk in individual bank shares can rise rapidly. This may lead to investors demanding a higher risk premium than is captured by the annual estimates.

2.2 The banks' estimated cost of equity is around 8 per cent

The cost of equity, i.e. the required rate of return on equity, can now be calculated for each bank using equation (1) and the inputs from the previous section. The estimated cost of equity is presented inFigure 5. The average cost of equity for large listed companies is also included in the figure as a reference point.[23]

Figure 5. Estimated required rate of return using annual beta values

Per cent



Note: Beta values are based on the sensitivity of each bank share to the OMXSPI. The required rate of return for large companies refers to PwC's survey-based measure for the valuation of shares in large listed companies with an assumed beta value of 1, i.e. average market risk. The solid grey horizontal line represents an average for the banks over time.

Sources: PwC and own calculations.

Over the entire period, the estimated required rate of return averages just under 8 per cent for the major Swedish banks. For European banks, too, the required rate of

[22] The banks' beta values, for example, were higher than 2 during the financial crisis. Volatility in the financial markets was also high during the initial phase of the pandemic, and consequently the banks' beta values were likely to be high as well. However, volatility decreased relatively quickly, meaning that the effect is more muted in an annual beta estimate. Extensive stabilisation measures were also introduced during the pandemic, which helped to calm the market and financial institutions in particular.

[23] Large companies refer to companies included in the OMXS30, i.e. the 30 most traded and largest companies on the Stockholm stock exchange. The average cost of equity for large companies is reported as an external benchmark for a market-based required rate of return on equity, rather than as a direct comparative measure.

return amounts to approximately 8 per cent, estimated using CAPM.[24] The Swedish ten-year government bond yield, which is used as a proxy for the risk-free rate, has been very low, even negative, for much of the period. Viewed in isolation, this has helped to keep the required rate of return down. At the same time, the market risk premium has been relatively stable during the estimation period, which can be interpreted as investors demanding roughly the same return for investing in the stock market regardless of how low the risk-free rate became. For banks with beta values close to or above 1, this partly offsets the effect of the low risk-free rate. The variations are therefore mainly driven by changes in the estimated beta values. Compared with the estimated required rate of return for large companies (the dotted black line), the banks' required rates of return show greater variation over time, but the trend broadly follows a similar pattern and is similar when expressed as an average.[25]

Different methods yield different estimates of the cost of equity

The required rate of return estimated using CAPM takes into account only systematic market risk. However, as the cost of equity is not directly observable, there is no robust benchmark for assessing which estimate best reflects investors' actual required rate of return on equity. As mentioned in previous sections, there are several ways to estimate the cost of equity. In addition to CAPM, there are, for example, multi-factor models, which include additional risk factors, and implicit methods that derive the required rate of return from current stock prices and expected future profits.

Table 1. Estimates of the average cost of equity for banks in the euro area using various models

	Factor models					Implicit models				
	CAPM	FF3	FF3 o	FF3 c	FF3 oc	FCFE	OJ	OJS	GLS	CT
Average	7.32	12.44	11.81	8.02	8.72	9.72	10.66	12.59	8.44	11.93

Note: The table shows the estimated average required rate of return using ten different models. The average represents the market-value-weighted average for each bank per model over time. The factor models consist of *CAPM*; *FF3* refers to the Fama-French three-factor model; 'o' corresponds to FF3 with orthogonalised factors; and *'credit'* refers to FF3 extended with the credit factor. The models for the implicit estimation of the cost of equity consist of *the free cash flow to equity* (FCFE) *model*; *OJ* refers to *the abnormal growth in earnings* (AGIE) *model* (Ohlson and Juettner-Nauroth (2005)), and *OJS* refers to a simplified version of *OJ*. *GLS refers to* the *residual income* model (Gebhardt, Lee and Swaminathan (2001)), and *CT* refers to an alternative *residual income model* (Claus and Thomas (2001)). For further details, see Altavilla et al. (2021), *"Measuring the cost of equity of euro area* banks", ECB Occasional Paper Series No 254.

Source: Altavilla et al. (2021).

Several studies show that these alternative approaches often yield a higher estimated required rate of return than CAPM. CAPM consistently appears as the factor model yielding the lowest estimate. CAPM-based estimates thus often lie in the lower part of the range of reasonable estimates of the required rate of return (seeTable 1). Altavilla et al. (2021), for example, show that multi-factor models on average yield higher

[24] See Altavilla et al. (2021). Models with more factors yield slightly higher estimated required rates of return.

[25] It should be noted, however, that the average for large companies is based on the period 2009 to 2025, while the average for banks is based on a longer period.

required rates of return than CAPM for banks in the euro area. Implicit, forward-looking methods do so as well.

As the table illustrates, there is considerable variation between the individual models. The average varies within a relatively wide range, from just over 7 per cent to almost 13 per cent, with the implicit models on average tending to result in a slightly higher cost of equity. At the same time, the authors emphasise that despite the differences in levels, the estimates largely move in tandem over the business cycle, and the models convey a similar picture of how the required rate of return has evolved over time.

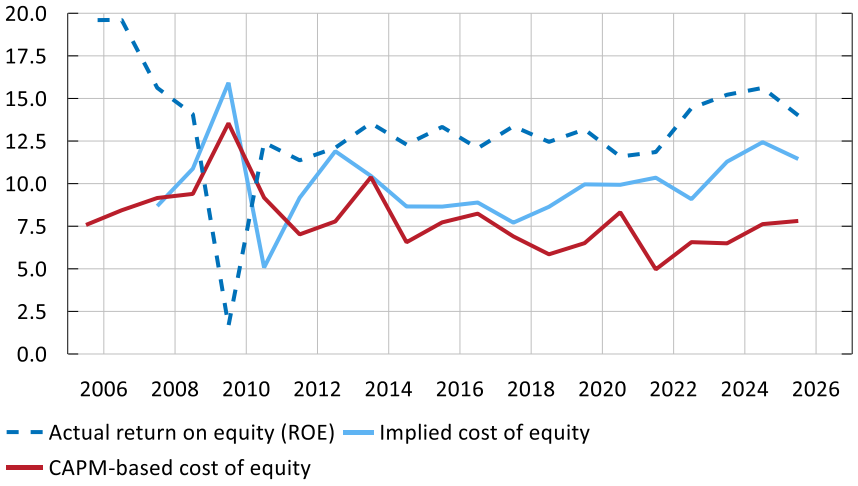
One explanation for the differences in levels is that the models are based on different assumptions regarding which factors influence the expected return of stocks. Multi-factor models, for example, take into account a greater number of systematic risk factors. In asset pricing research, Fama and French's models are the best-known extensions of the CAPM. Their three-factor model supplements the market factor with a size factor and a value factor, and later models also include factors for profitability and investment. Such factors are not specific to banks, but research has shown that they can help explain the cross sections of bank stock returns.[26] The implicit models, on the other hand, are forward-looking and derive the cost of equity from current share prices and expected future profits. This means that they capture the market's overall risk assessment in a way that is not fully reflected, or even measurable through individual components, in historical returns. These methods also require assumptions to be made regarding, among other things, future profit growth and dividends, and these assumptions can be subjective.

To put the Swedish banks' estimated required rates of return into perspective with their actual profitability, we compare them in**Fel! Hittar inte referenskälla.** with the return on equity (ROE). As a complement to CAPM, an alternative implicit estimate of the cost of equity is also included (seeAPPENDIX – *Implicit estimated cost of* for details). This method is based on valuation theory rather than portfolio theory and is based on the idea that the price of an asset reflects the present value of its expected future cash flows, discounted using investors' required return. In brief, this alternative method involves deriving the required return that makes banks' current market value consistent with market expectations. The required return is solved for the discount rate that makes today's market value consistent with forecasts of banks' future profits, dividends and long-term growth.

[26] Research in asset pricing, i.e. how risk is priced in financial markets, is extensive. Since Fama and French's early contributions, a large number of additional factors have been proposed to explain differences in expected returns of stocks. The literature has grown so substantially that it is sometimes described as a "factor zoo", see for example Feng, Giglio and Ziu (2017).

Figure 6. Estimated average required rate of return using two models and the actual average return on equity (ROE)

Per cent



Note: The required rate of return is estimated using two models: CAPM and a forward-looking residual income-based model. Refers to equally weighted averages of all three time series for Handelsbanken, SEB and Swedbank.

Sources: The banks' interim reports and our own calculations.

Return on equity (ROE) has, for most of the period, exceeded both the CAPM-estimated required rate of return and the implicitly estimated required rate of return. The main exception is the period surrounding the financial crisis, when profitability fell sharply as a result of significant loan loss provisions and deteriorating financial conditions. Overall, this indicates that, for much of the period, the banks are likely to have generated a return on equity that exceeded the estimated market-based required return on equity. Such differences between actual returns and required returns have contributed in giving banks scope to build and preserve capital buffers.

2.3 Banks' return on equity exceeds the required return on equity

Although the estimate above is model-based and simplified, it can be used to assess whether and by how much the banks' actual return deviates from a market-based return requirement in terms of actual figures. To quantify the deviations, the residual income model is applied in this analysis.[27] This model calculates the proportion of annual profits remaining after investors can be said to have been compensated for the required rate of return on equity arising from the cost of equity. Specifically, the required rate of return on equity is multiplied by the bank's opening book equity for the year; for example, for 2020, equity at the end of 2019 is used. This is then compared with the actual net profit for the year.[28] Any difference is referred to as residual profit.

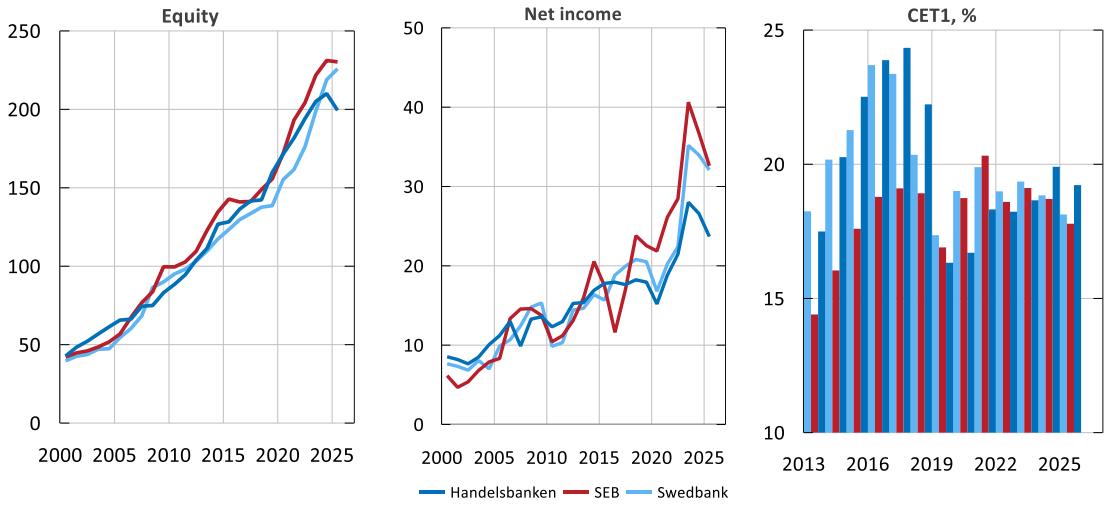
[27] The residual earnings model is commonly used to value a company based on its earnings and equity. Various versions of the model have appeared historically. For the theoretical derivation of the model, see Peasnell (1982) and Ohlson (1995).

[28] Refers to the profit for the period, bottom line.

This corresponds to the portion of profit that exceeds the cost of equity, i.e. the market's required rate of return on equity. The method is applied retrospectively to the major banks for the period 2000–2025. Both CAPM and the implied estimate are used to calculate the residual profits.

Figure 7 presents the banks' equity and net profit over time. Since the early 2000s, the banks' equity has more than quadrupled. Net profit has also shown an upward trend. This trend reflects both the growth in the banks' balance sheets and the strengthening of capital ratios following the financial crisis, driven by both strong earnings and higher regulatory requirements. As capital requirements are primarily based on risk-weighted assets rather than total assets, capital needs are influenced by both volume growth and changes in risk weights. Another way of looking at capital trends is therefore to examine the development of banks' CET1 ratios, which measure Common Equity Tier 1 capital in relation to risk-weighted assets. The CET1 ratio rose in conjunction with the stricter regulatory requirements following the financial crisis but has since remained relatively stable, averaging around 18–22 per cent for the major Swedish banks. This means that the increase in equity in absolute terms in recent years has largely occurred in line with the growth in risk-weighted assets, rather than through a continued increase in capital relative to risk-weighted assets.

Figure 7. Common equity, net profit and CET1 ratio for the major banks
SEK billion and per cent



Note: Refers to group level. Net profit refers to profit for the period (full year). CET1 ratios refer to annual averages.

Sources: The banks' quarterly reports.

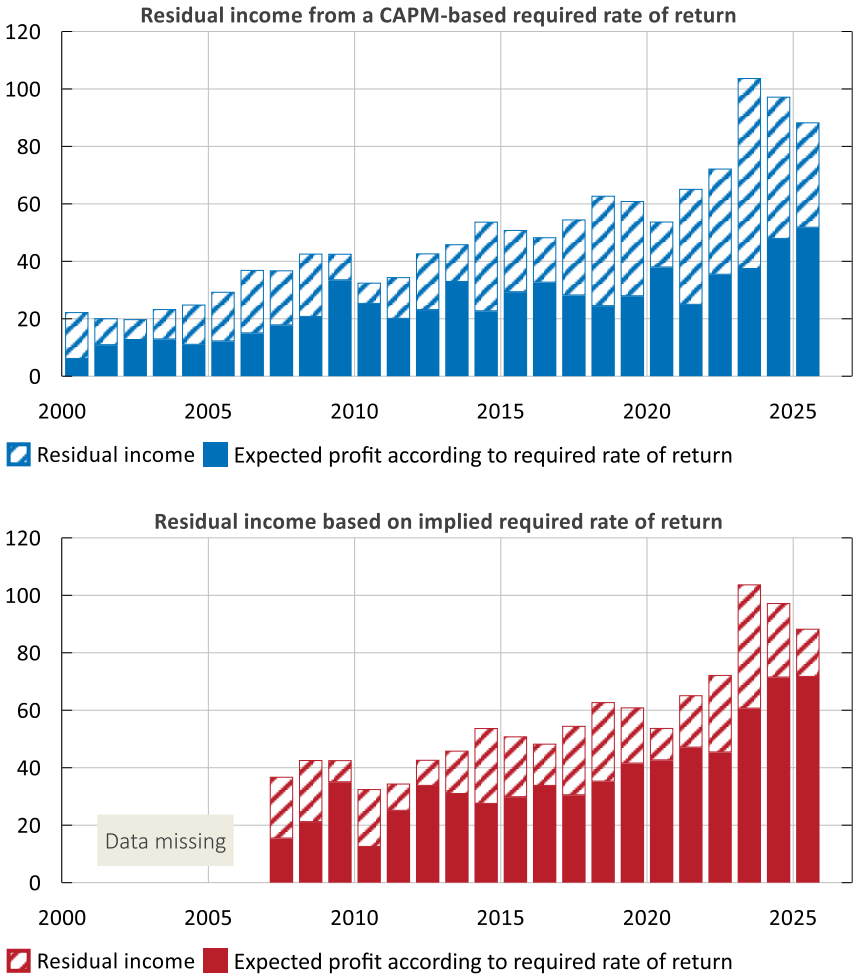
Figure 8Figure 8 shows the aggregate net profit for Handelsbanken, SEB and Swedbank broken down into profit according to the required rate of return on equity and residual profit. Profit according to the required rate of return refers to the portion of profit corresponding to the market's required rate of return on equity (k_E), calculated using CAPM and implicitly. Residual profits (RP_t) thus constitute the portion of profit exceeding this requirement, as follows:

$$RP_t = (ROE_t - k_E) \cdot E_{t-1}$$

where ROE_t is the return on equity, k_E is the estimated cost of capital and E_{t-1} is the value of book equity in period t-1.

Figure 8. Decomposition of the major banks' profits based on two alternative estimates of the required rate of return

SEK billion



Note: Refers to aggregated figures for Handelsbanken, SEB and Swedbank.

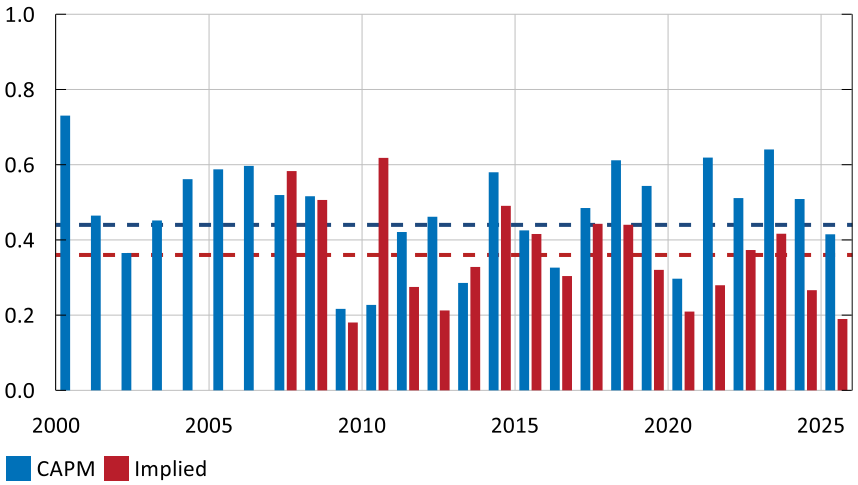
Sources: Own calculations and the banks' quarterly reports.

Figure 8 also shows that residual profits exhibit clear variation over time, broadly following the economic cycle. During periods of crisis, such as the financial crisis and the COVID-19 pandemic, residual profits fall, but they remain positive in every year. Following the crisis in 2020, residual profits rose rapidly to high levels. This upturn coincided with a period of rapidly rising interest rates, when banks' net interest income increased sharply while credit losses remained low. This meant that the return on equity rose faster than the required rate of return, which increased the difference between actual profit and the profit required to cover the cost of equity. In recent years, however, residual profits have fallen slightly as interest rates have begun to fall again.

On average, they amount to just over 40 per cent of aggregate profit according to the CAPM estimate and around 35 per cent according to the implicit estimate (seeFigure 9).

Figure 9. Residual profits as a proportion of total profits based on two alternative estimates of the required rate of return

Share



Note: Refers to the aggregate share of aggregate profit for the three major Swedish banks. The dotted lines refer to the average share for each estimation method.

Source: Own calculations.

Comparing the two estimation methods, we see that the level of residual returns is influenced by how the required rate of return is estimated. The implied required rate of return is, on average, higher than the CAPM-based rate, which mechanically reduces the portion of returns classified as residual returns.

3 Assumptions and model choices affect the results

Overall, the results suggest that banks' profitability has exceeded the market's required rate of return on equity over longer periods. However, the analysis presented in this Staff Memo is based on a number of simplifying assumptions and should therefore be interpreted with some caution. Its purpose is not to establish a single correct level for banks' cost of equity or to draw normative conclusions about profit levels in the banking system. However, the modelling approach can help to shed light on how banks' profitability relates to the market's required return.

A key methodological limitation concerns the use of CAPM to estimate the cost of equity.[29] The model considers only the part of the risk captured by covariance with the broad equity market. If investors also require compensation for other systematically priced risks, the CAPM-based required rate of return may therefore underestimate the actual cost of equity. For banks, such risks may, for example, relate to particular sensitivity to financial crises or funding and liquidity risks. This means that beta, as the sole risk indicator, risks providing an incomplete picture of investors' actual risk exposure. Empirical studies also show that market beta often has only a limited ability to explain differences in returns between assets, while other risk factors contribute more systematically to explaining return patterns. Despite these limitations, CAPM is often used as a simple and transparent benchmark model for estimating a market-based required rate of return, including in analyses of banks.[30]

Implicit government guarantees for systemically important banks may also influence market risk pricing. If investors expect the government to intervene in a crisis, they may perceive the risk associated with holding bank stocks as lower and thus lower their required rate of return. The introduction of resolution frameworks and minimum requirements for own funds and eligible liabilities (MREL) is intended to reduce the importance of such guarantees, which could instead increase investors' risk exposure and thereby raise the required return. At the same time, resolution regulation means that banks must maintain larger buffers and have clear plans for orderly crisis management and recovery. This may reduce the probability of uncontrolled failures and contagion effects, which on the whole reduces the actual risk in the bank. The overall on market risk pricing is therefore ambiguous and depends on which mechanism dominates.[31]

[29] The most common criticism of CAPM is that the model is overly simplistic and based on assumptions that rarely hold true in practice. For example, it assumes that investors are rational, have homogeneous expectations and can borrow and invest without limit at a single risk-free rate. Furthermore, the model assumes that all risk can be summarised by a single measure, beta, which measures covariance linearly with the market portfolio.

[30] In a study conducted by Altavilla et al., 41 per cent of the European banks surveyed stated that they use some form of calibrated version of the CAPM (model-based – CAPM). A further 9 per cent use other model-based methods (model-based – other). Model-based methods are particularly common among banks that are listed on the stock exchange and can therefore use stock prices in the derivation of the required rate of return. See Altavilla et al. (2021), Chart 6. *Reported estimation methods for cost of equity of euro area significant institutions.*

[31] See FSB (2021), Acharya et al. (2016) and Schich and Lindh (2012).

A further limitation relates to the application of the residual profit model. The model is based on reported equity, whereas banks' capital management and regulatory requirements relate largely to regulatory capital measures, such as Common Equity Tier 1 capital. These measures do not fully coincide with book equity. This means that residual profits should be interpreted as a measure based on reported equity, rather than as a direct assessment of profitability in relation to the banks' regulatory capital requirements.

There may also be other factors that could affect the level of any residual profits for the banks, for example of an accounting or tax nature. These may also include corporate strategic considerations, such as dividend policy, capital structure and so on, or the competitive situation in the market.

4 High profitability contributes to resilience

This analysis has examined the profitability of the major Swedish banks in relation to a market-based return requirement on equity. The starting point has been that high and stable profitability is, in principle, positive from a financial stability perspective, as it provides banks with better conditions for increasing capital and absorbing unexpected losses. At the same time, profitability cannot be assessed solely on the basis of the level of return on equity but should be related to the risk taken and the required rate of return that follows from this risk.

Our results indicate that, over time, the major banks have generated profits that, on average, have exceeded the cost of equity, regardless of whether this was estimated using the CAPM or based on market prices and expectations of future profits. This means that, according to these benchmarks, the banks have generated positive residual profits, i.e. profits that exceed the equity market's required rate of return.

From a stability perspective, this indicates that, during the period under review, the banks have been well placed to build and maintain capital buffers in excess of the minimum requirements. They have also been able to meet a growing credit demand in the economy without their capital ratios deteriorating. Strong profitability thus creates favourable conditions for banks to absorb unexpected losses, adapt to changes in capital requirements and continue to provide credit to households and businesses even during periods of weaker economic activity. The ability to generate a strong return on equity is therefore of central importance to the banks' resilience.

As mentioned, the results are method-dependent and sensitive to assumptions. The CAPM estimate is, to some extent, a backward-looking estimate of the cost of equity based on historical correlations between returns on bank shares and stock market performance. The implied required rate of return, on the other hand, is forward-looking and is influenced by current stock prices and expectations of future profit growth, including risks not fully captured by the beta in CAPM. If these limitations mean that the actual required rate of return is underestimated, the estimated residual profits

may thus be somewhat overestimated. The fact that both methods nevertheless indicate positive residual profits, however, strengthens the robustness of the results.

References

Acharya, V. V., Anginer, D., & Warburton, A. J. (2016). The end of market discipline? Investor expectations of implicit state guarantees. Working paper, New York University Stern School of Business.

Altavilla, C., Bochmann, P., Ryck, J. D., Dumitru, A. M., Grodzicki, M., Kick, H., Fernandes, C. M., Mosthaf, J., O'Donnell, C. & Palligkinis, S. (2021), "Measuring the cost of equity of euro area banks", *ECB Occasional Paper*, (2021/254).

Baker, M., & Wurgler, J. (2015), "Do strict capital requirements raise the cost of capital? Bank regulation, capital structure, and the low-risk anomaly", *American Economic Review*, *105*(5), 315–320.

Bandt, D., Camara, B., Pessarossi, P., & Rose, M. (2014). "Regulatory changes and the cost of equity: evidence from French banks" (No. 11), *Banque de France.*

Berger, A. N. (1995). The relationship between capital and earnings in banking. Journal of Money, Credit and Banking, 27(2), 432–456.

BIS Quarterly Review. September 2009.

Buch, C. (2024), "Bank profitability: A mirror of the past, creating a vision for the future", *Chair of the Supervisory Board of the European Central Bank Speech at Bocconi University, Milan*, 16 October.

Carletti, E., Leonello, A., & Marquez, R. (2024). Market power in banking. *Annual Review of Financial Economics*, *16*, 233–251.

Chen, Y., She, C., Wu, Q., & Wang, H. (March 2022). The ineffectiveness of the capital asset pricing model and its possible solutions. In 2022 7th International Conference on Financial Innovation and Economic Development (ICFIED 2022), pp. 105–111. Atlantis Press.

Copenhagen Economics (2025), Competition in the Swedish Banking Sector, September.

European Central Bank, Financial Stability Review, May 2024.

European Central Bank, Financial Stability Review, November 2019.

Fama, E. F., & French, K. R. (2004). The capital asset pricing model: Theory and evidence. *Journal of Economic Perspectives*, *18*(3), 25–46.

Feng, G., Giglio, S., & Xiu, D. (2020). Taming the factor zoo: A test of new factors. *The Journal of Finance*, *75*(3), 1327–1370.

Fernández Lafuerza, L., & Mencía, J. (2021), "Estimating the cost of equity for financial institutions", *Financial Stability Review/Banco de España, 40* (Spring 2021)*,* pp. 45–60.

Financial Stability Board (2021), "Evaluation of the Effects of Too-Big-To-Fail Reforms", Final report, 1 April 2021.

Frykström, N., Kärnä, A., Winstrand, J. and Östling Svensson, K. (2025), "Corporate bankruptcies and credit losses in Swedish banks", *Economic Commentary,* No. 11, Sveriges Riksbank.

Girotti, M., & Horny, G. (2020), "Bank equity value and loan supply", Working paper 767, *Banque de France.*

Gordon, M. J., & Shapiro, E. (1956), “Capital equipment analysis: the required rate of profit”, *Management Science*, 3(1), 102–110.

King, M. R. (2009), “The cost of equity for global banks: a CAPM perspective from 1990 to 2009”, *BIS Quarterly Review, September*.

Koller, T., Goedhart, M., & Wessels, D. (2010), “Valuation: measuring and managing the value of companies”, *John Wiley & Sons.*

Lintner, J. (1965), “The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets”, *Review of Economics and Statistics,* vol. 47, no. 1, pp. 13–37.

Markowitz, H. M. (1952), “Portfolio selection”, *Journal of Finance* 7, 1: 77–91

Martynova, N., Ratnovski, M. L., & Vlahu, M. R. (2015), “Bank profitability and *risk-taking”, International Monetary Fund.*

Modigliani, F., & Miller, M. H. (1958), “The cost of capital, corporate finance and the theory of investment”, American Economic Review, 48(3), 261–297.

Mossin, J. (1966), “Equilibrium in a capital asset market”, *Econometrica: Journal of the Econometric Society*, 768–783.

O'Hara, M., & Shaw, W. (1990). Deposit insurance and wealth effects: the value of being “too big to fail”. The Journal of Finance, 45(5), 1587–1600.

Ohlson, J. A. (1995), “Earnings, book values, and dividends in equity valuation”, *Contemporary Accounting Research*, *11*(2), 661–687.

Peasnell (1982), “Some formal connections between economic values and yields and accounting figures”, *Journal of Business Finance & Accounting*, Volume 9, Issue 3, pp. 361–381, 1982.

PwC (2012–2025), “The Risk Premium Study: The risk premium on the Swedish stock market”.

Schich, S., & Lindh, S. (2012). Implicit guarantees for bank debt: Where do we stand?. OECD Journal – Financial Market Trends, 102, 45.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, *19*(3), 425–442.

Swedish Competition Authority (2018), “Competition in Sweden 2018”, Report 2018:1.

Swedish Competition Authority (2023), “The Financial Market: Competition in Times of Crisis”, Analysis in Brief, 2023:2.

Swedish Financial Supervisory Authority (2015), “The implicit government guarantee for systemically important banks”, *FI Analysis No. 1,* Finansinspektionen (FI).

Swedish Financial Supervisory Authority (2024), “Consumers’ position in the banking market”, [only available in Swedish], 19 October 2023.

Swedish Financial Supervisory Authority (2025), “Bank Barometer”, 19 November 2025.

Xu, M. T., Hu, K., & Das, M. U. S. (2019), “Bank profitability and financial stability”, *International Monetary Fund.*

APPENDIX – Implicit estimated cost of equity

An alternative method for estimating the cost of equity is to derive an implicit required rate of return directly from market prices. This method is based on valuation theory rather than portfolio theory and rests on the idea that the price of an asset reflects the present value of its expected future cash flows, discounted by investors' required rate of return. In the so-called *dividend* growth model (Gordon and Shapiro (1956)), the cost of equity is determined as the rate of return required for the current share price to be consistent with expected future profits, dividends and assumptions about long-term growth. Expected profits are based on analyst consensus, while assumptions about the dividend payout ratio and long-term growth are exogenous.

Unlike factor models, which estimate the cost of equity based on historical covariance between returns, the implied required rate of return is based on a valuation model where the market price is used to derive the return that investors require given their expectations. The starting point is *the residual income model*, where the market value of equity can be expressed as follows:

$$P_t = E_t + \frac{RI_{t+1}}{k_E - g}$$

where P_t is the market value of equity, E_t is the book value of equity, g is the long-term growth rate, and residual income is defined as

$$RI_{t+1} = Net\ profit_{t+1} - k_E E_t$$

Under the assumption of a constant long-term growth rate, the model can be simplified to a closed form expression. For banks, this is relevant because retained earnings increase the capital base as follows

$$E_{t+1} = E_t + Net\ profit_{t+1}(1 - pay\ out\ ratio)$$

Often, 2–3 per cent is used for the long-term growth rate g and 0.5–0.7 for the payout ratio. The expected profit, $Net\ profit_{t+1}$, is based on analyst consensus forecasts, compiled from analysts' profit estimates for the coming financial year.[32]

[32] In this analysis, analyst consensus estimates from Bloomberg are used. Regarding the parameter *g*, it is often assumed that $g \leq$ long-term nominal GDP growth; otherwise, it is assumed that the firm would grow faster than the economy indefinitely, which is not sustainable. In this analysis, *g* = 2 per cent is used, which is standard. A higher assumed growth rate implies, given an unchanged market value, that a larger proportion of the value is attributed to future residual earnings, which requires a higher return for the equation to hold. As regards *the payout ratio*, this should be consistent with what the banks themselves report; 50–70 per cent is considered standard. In this analysis, 0.5 is used as *the dividend payout ratio*. *The dividend payout ratio* also affects the estimate through its impact on capital accumulation, but the sensitivity is generally lower than for *g*. Higher values for *g* and the dividend payout ratio both lead to a higher cost of capital, all other things being equal.

Given these three expressions, we can now calculate the implied cost of equity k_E, which becomes the discount rate that makes today's market value consistent with expected earnings and capital accumulation.

$$k_E = \frac{Net\ profit_{t+1} + g(P_t - E_t)}{P_t}$$

The implied cost of equity therefore corresponds to the sum of 1) the expected profit relative to market value and 2) a growth component related to the part of market value that exceeds book equity.

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