
# Equity Market Risk Premium (EMRP) on the Finnish stock market 2023

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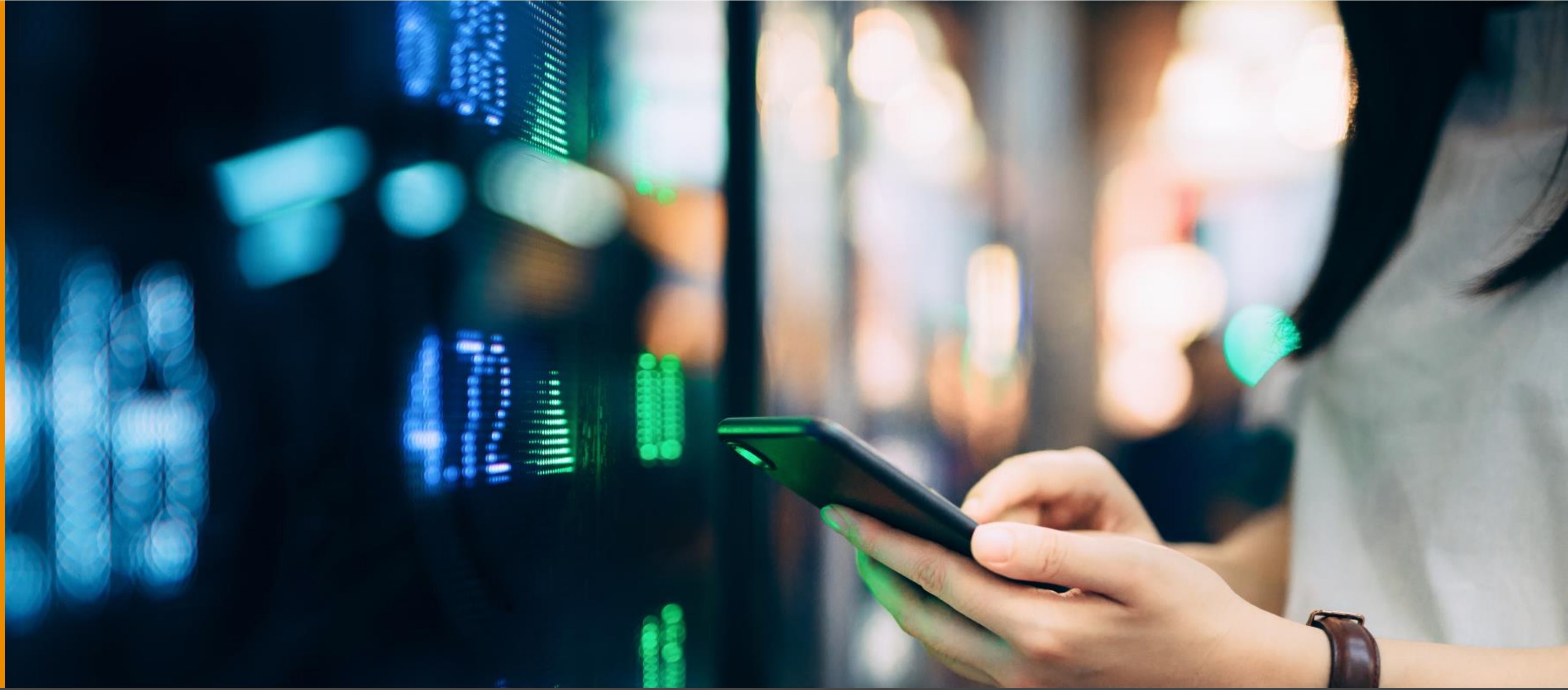
pwc

# What is equity market risk premium?



The Equity Market Risk Premium (EMRP for short, often also called market risk premium or equity risk premium) is an important component of the discounted cash flow (DCF) valuation approach.

In our experience, estimating it is one of the hardest and one of the most contentious parts of a DCF valuation. The EMRP is assumed to represent the excess return that equity investment provides over a risk-free rate.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# Compared to our previous study in October 2022, the risk premium increased by 0.5 percent to 8.0 percent, which is in line with the recent weak development of the Finnish stock market and the macroeconomic state. During times of prevailing market uncertainty, the Finnish stock market's thin liquidity and its position as a peripheral market are highlighted

**8.0%**

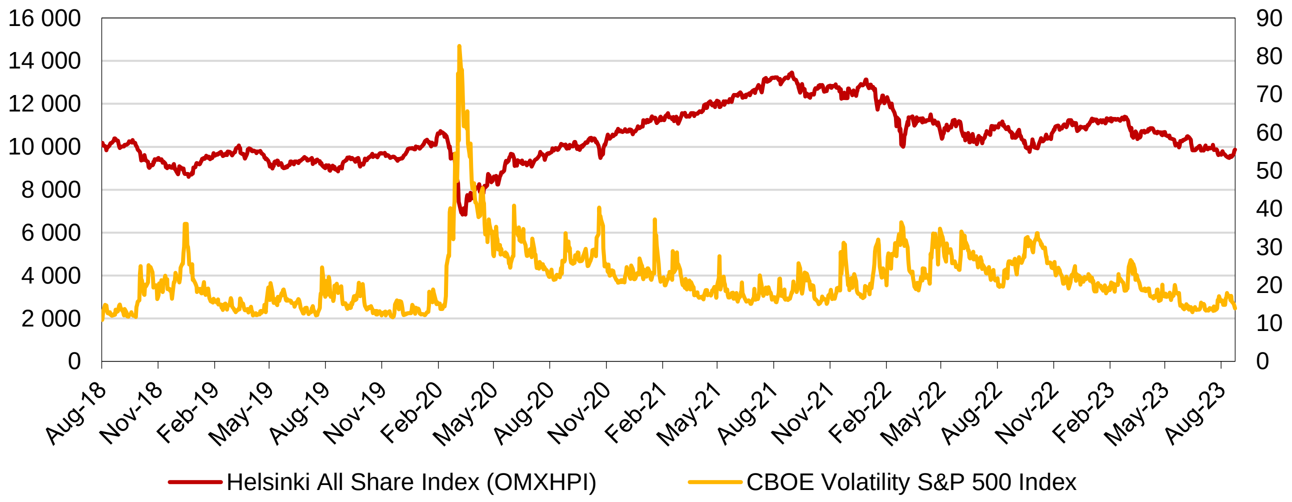
Equity Market Risk Premium (EMRP) for Finland according to our most recent study

PwC has studied the equity market risk premium on the Finnish stock market since 1999. **The results from our latest study show that the market risk premium on the Finnish equity market is 8.0%.**

A high level of risk and constant uncertainty have continued to hinder the development of the stock market following our recent study, which was published in the beginning of October 2022. As the war in Ukraine continues and the interest rates have still been rising, the development of the Helsinki Stock Exchange has been weak. The weakness of the macroeconomic outlook causes special challenges for cyclical enterprises, whose significant weight on the Helsinki Stock Exchange is strongly reflected in the development of the index.

During uncertain times, institutional investors tend to focus on their home market, which results in selling pressure in peripheral markets such as the Helsinki Stock Exchange, as large international institutional investors reduce their weight in such markets. This selling pressure results in decreasing share prices, when the demand of domestic investors cannot meet the demand of foreign investors, given the prevailing thin liquidity.

In addition, the stock price development of several companies with the largest market capitalisations in the Helsinki Stock Exchange has been quite weak recently. This development might be affected by both company-specific and industry-specific factors.




As witnessed during the financial crisis, market liquidity dropped after the large negative market returns decreased stock liquidity.[1] Generally, during times of uncertainty in the market, many asset holders want to simultaneously liquidate their positions, which leads to lower realised market prices. This effect is amplified in peripheral markets, such as Finland, where the liquidity is tighter to begin with.

Market volatility has been on a downward trajectory over the past year, yet it still remains higher than the level prior to the COVID-19 pandemic.

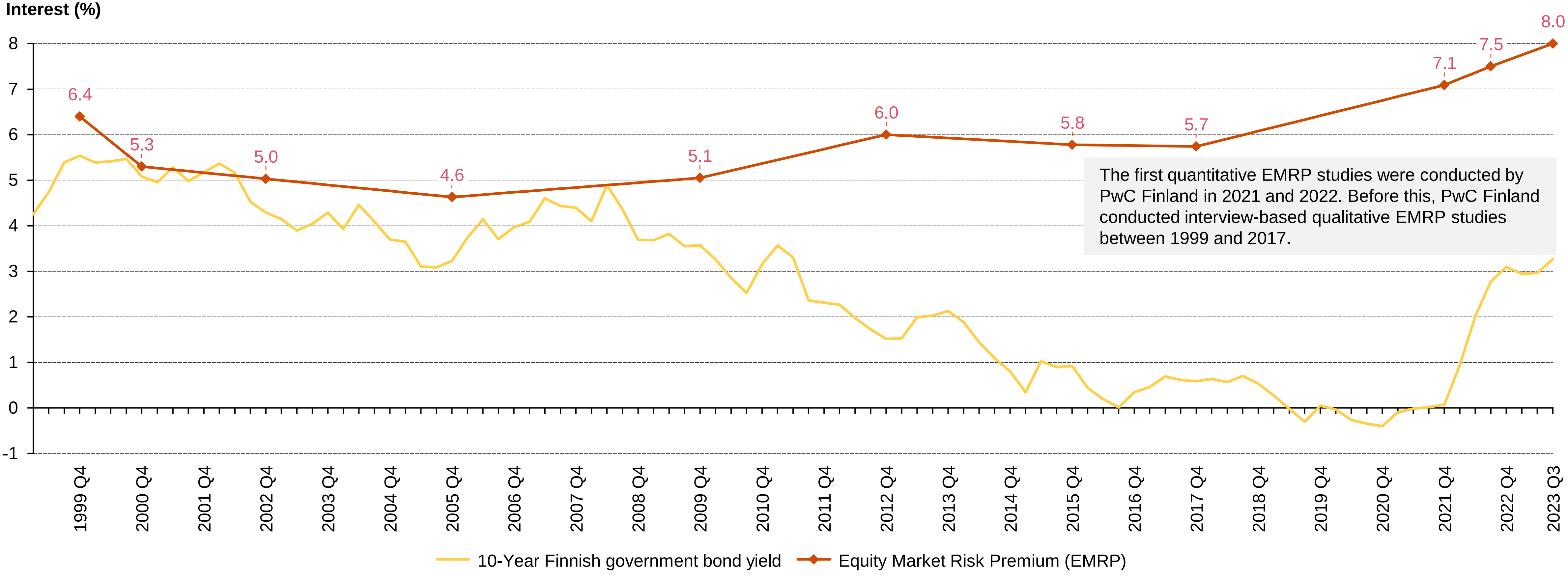
The outlook for the last quarter of 2023 continues to be negative, as there are hardly any positive signs to be seen in the interest rate outlook, the macroeconomic aspects, or in the war in Ukraine.

For the sake of comparison, we have also analysed other Nordic markets utilising the same methods as for Finland. Based on the results of our research, the risk premium of the Nordic stock markets varies, and the risk premium on the Finnish market is higher compared to the Nordic market.

[1] e.g. A. Hameed, W. Kang and S. Viswanathan (2010): Stock Market Declines and Liquidity, The Journal of Finance

# The EMRP and the risk-free rate in Finland during 1999-2022: The expected yield to maturity of the Finnish government's 10-year bond[1] and the risk premium of the Finnish stock market according to PwC Finland's research results[2]

The return requirement for the 10-year Finnish government bond began to rise rapidly and simultaneously with the increase in the general interest rate level after the beginning of 2021. The equity market risk premium has also continued its upward trend, which started in 2017.




[1] Bank of Finland 15 August 2023. Accessible on: https://www.suomenpankki.fi/en/Statistics/interest-rates/tables/korot_taulukot/viitelainojen_korot_en/

[2] PwC Finland, Equity market risk premium studies from 1999-2023. The 2022 version accessible on: https://www.pwc.fi/fi/julkaisut/osakemarkkinariskipreemio-suomen-markkinoilla-vuonna-2022.html

When analysing the corresponding sample, we utilised the same methodology that we used in our previous studies in 2021 and 2022. Our 2023 study included 164 Finnish listed companies, whose cash flows we analysed based on available forecasts for the upcoming five years.

Our sample consists of 164 listed Finnish companies. We excluded financial institutions such as banks, insurance companies and holding companies from our sample, because their cash flows are reported in a manner that makes it difficult to set them on an equal footing with other types of companies.

We estimated the unlevered free cash flow[1] for each company from calendar year 2023 to calendar year 2028 using two approaches. First, we utilised market consensus estimates whenever they were available, which was the case for the majority of companies. If the consensus estimate did not cover the whole forecast period, we assumed a 2% cash flow growth rate for the missing years. Second, for the small number of companies with no consensus estimates available, we assumed a 2% cash flow growth rate based on 2022 cash flows.

After adding up the aggregated cash flows in each forecast year and the terminal value calculated with a 2% growth rate assumption, we determined the discount rate which made the sum of discounted cash flows equal to the total enterprise value based on three-month average market capitalisation and current net debt level of our sample companies.

The discount rate that set the present value of the cash flows equal to the aggregated enterprise value of the market is 10.1%. As the cash flows we used do not include interest payments or repayment of debt, the discount rate equals to weighted average cost of capital (WACC). Then, we calculated the required rate of return for equity (11.3%) on the whole market level based on aggregated amount of net debt, estimated cost of debt[2], and three-month average market capitalisation.

The required rate of return for equity is composed of two components: the risk-free rate and the equity market risk premium. Given that our sample of companies represents the entire Finnish stock market, we assumed that the beta is equal to 1. This means that after deducting the risk-free rate from the discount rate we get the equity market risk premium. For the risk-free rate we used the yield for a 10-year Finnish government bond yield. As per 30 August 2023, the date of our analysis, this was equal to 3.3%. After subtracting this from the required rate of return for equity calculated above (11.3%), the equity market risk premium is 8.0%.

Compared with the result of last years’ study (7.5%), conducted in October 2022, we see an increase of 0.5% in the risk premium. This increase is parallel to the heightened levels of volatility and the altered risk outlook of the equity market.

[1] The unlevered free cash flow is defined as: EBIT (net of tax) + Depreciation and amortisation + Amortisation of deferred charges - Capital expenditure + Sale (purchase) of intangible assets + Total stock-based compensation - Change in net working capital. Tax rate is assumed to be 20%, 20.6%, 22%, and 22% for Finnish, Swedish, Danish, and Norwegian stock market, respectively.

[2] We use aggregated interest expense divided by aggregated amount of interest-bearing debt as a proxy for cost of debt in each stock market. Tax shield effect is also taken into account when calculating WACC.

## Although our current methodology differs slightly from our surveys prior to 2021, our surveys for the years 2021–2023 are still comparable to the earlier surveys

The strength of our approach lies in the fact that we monitor the cash flows that form the basis for a typical discounted cash flow (DCF) valuation. Another option would have been to look at dividend yield and possible share buybacks, but this approach overlooks a significant portion of incoming cash flows for many companies. Forecasting dividends is also more difficult and could introduce greater potential for our own biases to influence the results.

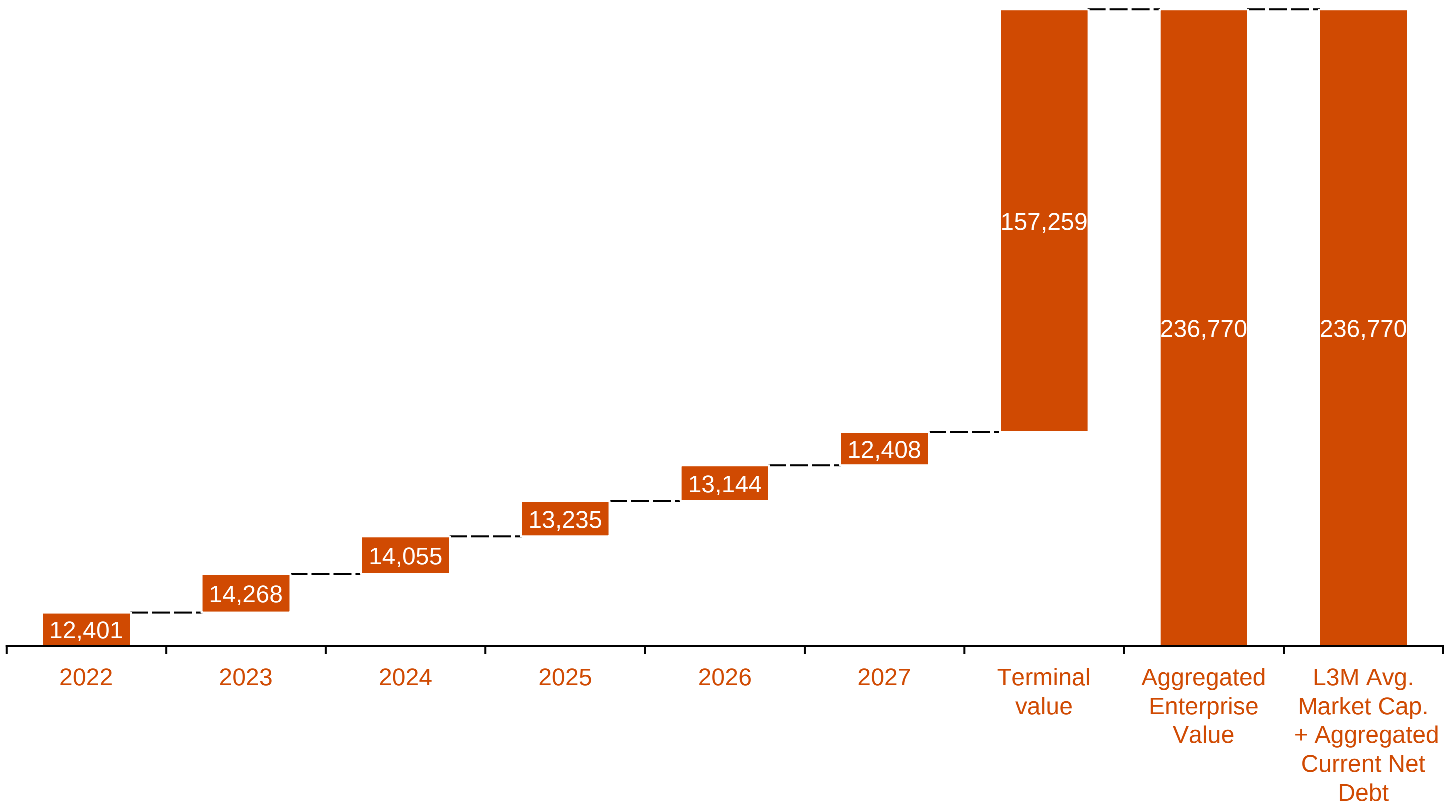
### Comparison to our past studies

We conducted our most recent survey-based study in late 2017 as a survey of brokerage firms, asset management companies, private equity companies, insurance companies, universities, and other professional firms and institutions. We had initially planned to conduct the next survey during 2020 but due to the outbreak of COVID-19, we decided to postpone our survey indefinitely.

Since then, we have conducted our equity market risk premium studies using quantitative methods. The main reason for this is that Finland is a comparatively small market and the number of responses had been low, approaching a threshold where the answers would not have covered enough viewpoints for us to yield a reliable result. The methodology of our 2022 study is identical to the one used in our previous study in 2021.

Despite this change in methodology, the studies from 2021-2023 remain somewhat comparable to all our past survey-based studies for Finland. This is indicated by the similar results[1] obtained by PwC Sweden through a survey-based approach, compared to our results for Sweden obtained through a quantitative approach (e.g. EMRP of 6.1% in 2023 vs. 6.0% in 2022).

[1] See “Riskpremien på den svenska aktiemarknaden”, published by PwC Sweden on the 21 June 2023, accessible on: https://www.pwc.se/riskpremiestudien.



# Comparing Finland's risk premium of 8.0 percent with other Nordic risk premiums in 2023, we see that risk premiums vary between different Nordic markets, but fall within a similar range

## Contextualising the study results

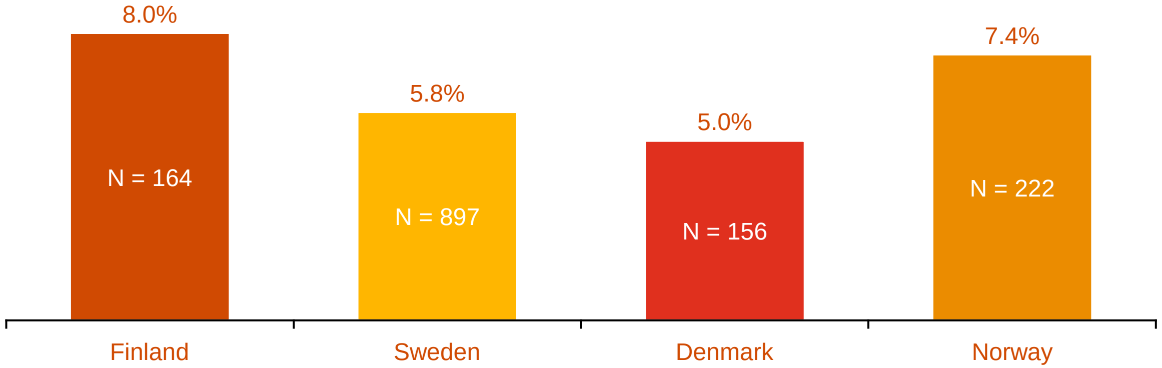
Estimating equity market risk premiums is difficult. The result is dependent on consensus forecasts and moving averages of market capitalisations. The terminal growth rate is also a very important estimate. To get a firmer grip on the result, we ran sensitivity analyses on the market capitalisations and terminal growth rates. Our sensitivity analysis shows that the risk premium ranges from 8.36% to 6.36%, with an average of 7.34% and a median of 7.31%.

| | 2.0% | 1.5% | 1.0% | 0.5% | 0.0% |
|---|---|---|---|---|---|
| -3mo | 8.014% | 7.596% | 7.181% | 6.768% | 6.358% |
| -2mo | 8.174% | 7.756% | 7.342% | 6.930% | 6.521% |
| -1mo | 8.358% | 7.942% | 7.529% | 7.118% | 6.710% |
| t=0 | 8.118% | 7.701% | 7.286% | 6.874% | 6.465% |

Our results based on market data give higher values for the risk premium of the Finnish stock market, compared to, for example, NYU Stern's finance professor Aswath Damodaran's research[1] that is based on country risk instead. Damodaran assesses the market risk by adding a premium based on the country risk to the required return of the stock market of an AAA-rated country (i.e. USA) according to Moody's credit rating. For Finland, Damodaran obtains an equity market risk premium of 5.61 percent, as Finland's country risk premium of 0.61 percent is added to the US stock market risk premium of 5.0 percent. In the case of Finland, however, this kind of methodology does not take into account the special features of our stock market, such as its position as a peripheral market or the high weight of cyclical companies within the index.

[1] See Aswath Damodaran: "Country Default Spreads and Risk Premiums", 12 July 2023; accessible: https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html
[2] See "Riskpremien på den svenska aktiemarknaden", published by PwC Sweden on the 21 June 2023, accessible on: https://www.pwc.se/riskpremiestudien
[3] The pharmaceutical company Novo Nordisk A/S was excluded from the Danish sample, as its market value represents almost half of the Copenhagen stock exchange, and would thus affect the results with a disproportionate weight

In the chart below, we present the Finnish equity market risk premium compared to other Nordic peers. The Finnish premium is the highest but still remained within the Nordic range. The result for Denmark is significantly lower, while for Norway it is, in turn, only somewhat lower. The higher results for Finland and Norway could be explained by e.g. substantial weights of cyclical industries in both of the equity markets. Using a different approach gives us a chance to compare our results with those of PwC Sweden's survey-based annual risk premium study, to see whether we get similar results with a different method.




Since our quantitative approach differs from PwC Sweden's (qualitative) survey approach, we can compare the research results to determine whether the different methodology influences the results. We used Sweden's 10-year government bond yield (2.82%; 15.8.2023) as Sweden's risk-free interest rate. When this is subtracted from the stock market's return requirement (8.65%), the stock market's risk premium is 5.8 percent, which is a lower figure than the 6.1 percent obtained in PwC Sweden's most recent EMRP study[2].

Similarly, for Denmark, we used the yield of the Danish 10-year government bond (2.95%; 15.8.2023). When the return requirement of the stock market is 7.98 percent, the risk premium of the Danish stock market is 5.0 percent[3]. For Norway, we used the yield of Norway's 10-year government bond (3.86%, 15.8.2023). When this is subtracted from the stock market return requirement (11.22%), the market risk premium for the Norwegian stock market is 7.4 percent.

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