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Valuation Insights

Equity Risk Premium in India

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Contents

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Disclaimer

ERP estimation involves the use of subjective estimates and multiple approaches. Hence different researchers may come out with different ERPs. Further, the ERP concluded in this report represents the ERP prevailing after the publication date and hence should not be considered representative of the ERP prevailing at any other historical date. The ERP remains stable for a fairly long period unless there is a drastic change in the economic and market conditions. Hence, the concluded ERP could be considered effective till such time the current analysis is updated in the future or there is a significant change in the economic and market conditions.

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Foreword

We are pleased to share with you our research on the equity risk premium (ERP) in India. In the second edition of our publication on this topic, we have analysed the ERP for India from two perspectives: Historical and Forward-Looking (as of a cut-off date of 31 December 2018).

A key challenge often faced by investors, advisers and corporate finance professionals is to quantify the additional premium or opportunity cost that should be demanded for holding the equity asset class. Given the subjectivity involved in estimating such a premium, the question spills over to the underlying assumptions of the approach to be used, time period considered, market definition, etc. This risk premium needs to be reassessed periodically in line with fluctuations in the stock market performance and forecast of economic trends of the country.

We are pleased to share with you our research on the equity risk premium (ERP) in India. In the second edition of our publication on this topic, we have analysed the ERP for India from two perspectives: Historical and Forward-Looking (as of a cut-off date of 31 December 2018).

Historical analysis indicates that the Indian stock market gave an average annualised return of 16.70% during 2001-18 for different investment horizons, implying an excess return of 8.86% over the risk-free rate. We further adjusted this excess return for the return generated due to expansion in the valuation multiples (considering that the valuation multiples cannot keep on expanding in perpetuity for a developed/ efficient equity market).

On a forward-looking basis, we estimated the return expectation priced in the current market index. This was estimated as the rate which when used to discount the future expected cash flows (based on consensus forecasts) from constituent companies of the Nifty index, results in a present value of these cash flows which is equal to the market cap of the Nifty index. This analysis indicates that despite the Nifty index trading at a near all-time high PE multiple, the expected healthy growth in future earnings/cash flows still implies an expected return of 15.17% with a risk-free rate of 7.50%.

While the two analyses provide two different estimates of ERP, each approach has certain inherent pros and cons. Hence, an average of the two estimates (rounded), ie 6.75%, has been considered as representative of the current ERP for India.

We hope the ERP estimate will be a useful input for valuation professionals, corporates and investors in their valuation analysis.

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Executive summary

Equity risk premium (ERP) is the excess return over and above the return on a risk-free asset which an investor demands for investing in the equity asset class. The significance of ERP in the world of investing and policy decision making cannot be emphasised enough.

While various techniques have evolved over time to estimate the ERP in a given market, we have used two of the most commonly and internationally accepted approaches, ie Historical Estimate Approach and Implied Estimate (Forward-Looking Estimate) Approach to estimate the ERP for the equity markets in the Indian economy. Our findings are as follows:

Historical Approach	5.68%
Forward-Looking Approach	7.67%
Equity risk premium (rounded)	6.75%

Background and context

Equity risk premium (ERP) is a key component of the overall required rate of return for equity investments. Equities are one of the most widely used asset classes for investment purposes for both short and long-term periods. Given the risk inherent in equities stemming from the nature of the asset class and uncertainty of future expected cash flows vis-à-vis a risk-free asset, investors demand an additional return for holding equities. Simply put:

ERP is the additional return that investors desire for holding investments in equities instead of a risk-free asset.

Since the required/expected rate of return that a rational investor should demand as the opportunity cost of investing in equities is seldom visible or identifiable through proxy instruments traded in the market, ERP becomes an important element in determining this required rate of return, which plays a crucial role for an investor to determine the risk-return trade-off for any investment.

The following is a brief summary of the key areas of investment and policy decision making that strengthen the significance of ERP:

Significance of ERP

As discussed above, opportunity cost is key to investment decision-making for any investor. The Capital Asset Pricing Model (CAPM) is one of the most widely used tools for determining this required rate of return that the investor should earn on equity investments and that should hold in equilibrium in the equity market. The model provides a relatively objective approach towards determining the required rate of return, and is grounded in the simplistic chief assumption that the risk of an asset is determined based on the asset's contribution to systematic risk over and above the risk-free rate.

Required rate of return = Risk free rate + ß (Equity risk premium)

Therefore, given the widespread acceptance and use of the CAPM worldwide, estimating the ERP becomes crucial to the decision-making process.

ERP plays a significant role in the following key areas of investment and policy decisions:

- In the world of corporate finance, ERP is important while determining the cost of equity and cost of capital for firms for their internal decision-making process to optimise the debt-to-equity ratios and deciding upon investments, buy-back and policies, etc.
- In areas of valuations and capital budgeting, it is used to arrive at the fair value of equity investments or net present values for projects serving as a proxy for the discount rate to determine the present value of expected future cash flows.
- ERP is also used as a gauge of market sentiment for the equity markets as it provides direction towards investor confidence as a proxy for the opportunity cost of investing.
- It is often used as a check in the individual saving versus investment decision-making process while putting aside an amount for future consumption purposes such as retirement or healthcare needs, as well as allocation of wealth to different asset classes.

Approach and methodology

As discussed in the previous sections, owing to the importance and widespread use of ERP, the approach and methodology followed to estimate ERP is critical. Even for long-established and developed equity markets, estimating the magnitude of ERP is challenging and could be a reason for altering investment decisions.

Broadly, three approaches exist for estimating ERP:
• Historical Estimate
• Forward-Looking Estimate
• Survey-Based Estimate

For the purposes of our analysis, we have considered the Historical Estimate and Forward-Looking approaches. Under both the approaches, we have considered a cut-off for the estimate date of 31 December 2018 for all market inputs.

Historical Estimate

ERP under this approach is estimated as an average of excess returns calculated as the difference between the total return for an equity market and the return on the risk-free assets of various investment horizons. This approach is often considered as a reliable choice of estimation, as it is based on the assumptions of homogeneous markets and market efficiency over a long period. Average returns in the equity market provide as a proxy for unbiased estimate of investors' expectations.

Input estimates

While estimating the ERP using this approach, selection of the following inputs is important:

• **Market portfolio**
  The market portfolio used to estimate the return in equity markets is often based on a broad-based equity market index which serves as a proxy of the country's equity market and is reflective of the economic conditions of the country.

  We have used the Total Return Nifty 50 index as the representative of the equity market in India, based on the following factors:

  – The index represents and is reflective of the economic conditions of the country.
  – The total volumes traded on the index reflect a significant portion of the liquidity in the equity market of the country.

– The index was launched in April 1996 and has a sufficient trading history to carry out the estimation of ERP without compromising on the time period required for the estimate.
– The components of the index constitute a broad mix of industries and sectors in the country.

The following table is a brief snapshot of the characteristics of Nifty 50:

**Table 1: Sector representation of Nifty 50**

Sector	Weight (%)
Financial services	37.18%
Energy	15.44%
Information technology	14.82%
Consumer goods	10.80%
Automobile	6.59%
Metals	3.81%
Construction	3.69%
Pharmaceuticals	2.53%
Cement and cement products	1.63%
Telecommunications	1.55%
Fertilisers and pesticides	0.75%
Media and entertainment	0.60%
Services	0.59%

Source: National Stock Exchange of India

**Closing prices of Total Return Nifty 50 Index
(June 2001 to December 2018)**
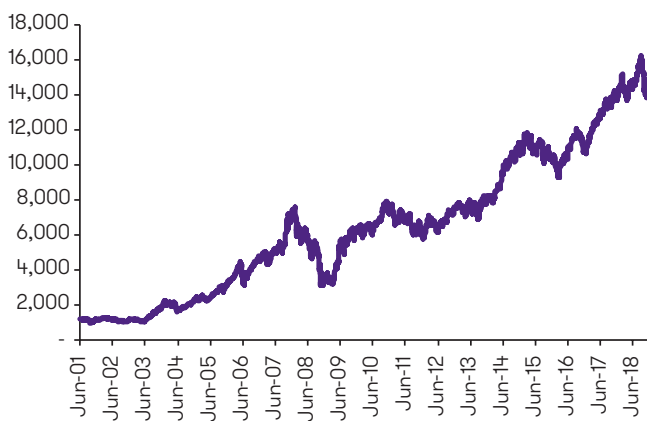
**10-year zero coupon yield
(June 2001 to December 2018)**
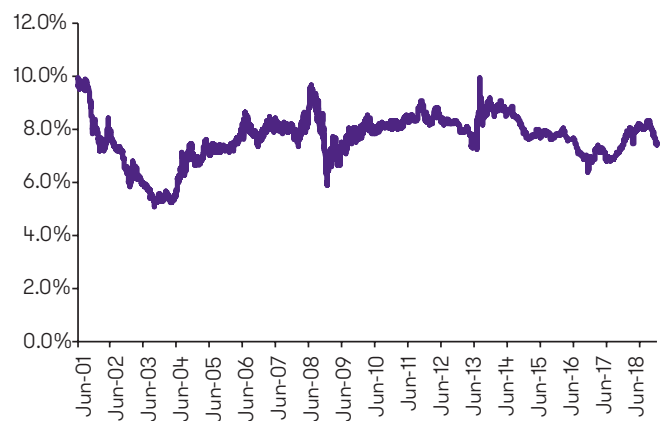
Risk-free rate of return

The choice to be made for the risk-free rate is often the tenure of the rate to be considered. In the specific case of an upward-sloping yield curve, where the yields on longer term bonds are larger than the yields on shorter term bonds, which is also witnessed in India, the risk-free rate based on longer tenures is preferred over shorter terms for the following reasons:

- Long-term yields are less susceptible/sensitive to unexpected inflation shocks.
- Based on the uses of ERP as mentioned previously, the most common of them being for the determination of the cost of equity under CAPM, long-term risk-free rate is also synonymous with investor expectations of long-term returns.

We have used the 10-year risk-free rate as published by Clearing Corporation of India Limited (CCIL). The risk-free rate published by CCIL is based on the Nelson-Siegel-Svensson model.

Time period

For the choice of time period for the sample considered to estimate the ERP, we have considered the longest tenure available based on the availability of data to increase the precision of our estimation. Since the risk-free rate published by CCIL was available from June 2001, we have considered the period from June 2001 to December 2018.

During this time period, we have considered various investment horizons, with the shortest investment horizon of one year, and then estimated the ERP for these investment horizons.

Types of mean

The choice of mean used to estimate the risk premium has an important impact on the estimate, and the choice remains between arithmetic and geometric mean. We have used the arithmetic mean to estimate the ERP over all the investment horizons as it best represents single-period holding returns, which are synchronous to the choice of model, the ERP is used with, ie most of the major finance models including CAPM and other multi-factor models are single-period return models.

Methodology

To estimate the ERP under the Historical Estimate approach, we followed the following methodology:

We estimated the compounded annualised growth in the Total Return Nifty 50 Index prices and bond prices based on the 10-year zero coupon yields for various investment horizons as:

$$\text{Return} = \left(\frac{\text{Index closing at } n^2}{\text{Index closing at } n^1} \right)^{\frac{365}{(n_2 - n_1)}}$$

We then estimated the excess return as:

Excess return = Return on TR Nifty 50 - Return on bond prices

Thereafter, we incorporated a forward-looking assumption in the analysis by eliminating the supply-side component. The supply-side adjustment takes into account the earnings that companies generate (supply). It is estimated by removing the

growth in the price-to-earnings ratio from the excess return as estimated above.

The underlying argument for making the above adjustment is that for a matured economy, long-term growth in the price-to-earnings ratio is not expected to improve in perpetuity;

therefore, in the long-run, the growth in expected market prices of companies cannot be sustained based only on the differential of market prices to the companies' earnings reflecting efficient markets. Therefore, the excess return is adjusted to arrive at ERP as follows:

$$ERP = \text{Return on TR Nifty 50} - \text{Return on bond prices} - \text{Return on } \frac{P}{E}$$

Conclusion

Table 2: Snapshot of ERP calculation under the Historical Estimate approach

Dates	13 Oct 17	27 Oct 17	3 Nov 17	10 Nov 17	17 Nov 17	24 Nov 17	1 Dec 17	8 Dec 17	15 Dec 17	22 Dec 17
19 Oct 18	1.1%									
26 Oct 18	1.0%									
2 Nov 18	1.2%	0.9%								
9 Nov 18	1.2%	0.8%	0.3%							
16 Nov 18	1.1%	0.8%	0.2%	-0.2%						
30 Nov 18	0.4%	0.1%	-0.5%	-0.9%	-1.2%	-0.5%				
7 Dec 18	0.1%	-0.2%	-0.7%	-1.1%	-1.4%	-0.7%	-0.5%			
14 Dec 18	0.1%	-0.3%	-0.8%	-1.2%	-1.5%	-0.8%	-0.5%	-0.5%		
21 Dec 18	-0.1%	-0.4%	-0.9%	-1.3%	-1.6%	-0.9%	-0.7%	-0.7%	-0.5%	
28 Dec 18	0.3%	-0.1%	-0.5%	-1.0%	-1.2%	-0.5%	-0.3%	-0.3%	-0.1%	-0.1%

The above matrix summarises the annualised excess return between the sample dates shown in the first column and row. For example, between 13 October 2017 and 19 October 2018, the annualised excess return of Total Return Nifty 50 over the bond prices based on 10-year zero coupon yield, and adjusted for the growth in the price-to-earnings ratio, is 1.1%. As mentioned previously, the minimum period between two dates was fixed at one year.

The arithmetic mean of ERPs thus calculated at various dates for all investment horizons was then calculated to conclude on the long-term ERP for India under the Historical Estimate approach, which was estimated at:

ERP=5.68%

Forward-Looking Estimate

Forward-looking estimates to calculate the implied ERP prevalent in the economy, indirectly captured in the current market value of the equity market, is another important approach to estimate the ERP. The importance of this approach stems from the fact that ERP to a large extent is based on investor expectations of economic and financial metrics going forward. These estimates are less subjective to issues of non-stationarity and data biases as compared to historical estimates, and therefore historical estimates and forward-looking estimates are often used in conjunction.

The approach of forward-looking estimates to arrive at the ERP is grounded in the reality that the total value of the equity market as represented by a broad equity index, reflected in its market capitalisation, is the present value of all the future cash flows expected to be earned in the equity market which are in turn represented by the expected future cash flows of the constituents of the equity index.

The discount rate which equates the present value of expected future cash flows to the total market capitalisation of all the constituents of the index represents the total market return expectation by investors in the equity market. Thereafter, ERP is estimated as the difference between the total market return and the risk-free rate.

ERP = Market return - Risk free rate

Methodology

Under this approach, we considered the following methodology to estimate the ERP:

- We used the Free Cash Flows to Equity (FCFE) approach to estimate the expected future cash flows for each of the constituents of the Nifty 50 Index.

FCFE = Cash flows from operations-Interest expense-Capital expenditure + Increase (Decrease) in net borrowings

- We considered a multi-stage growth model to estimate the expected future cash flows for each of the constituents of Nifty 50 from FY 2019 through FY 2028, and thereafter considered a terminal period which represents the expected free cash flows in perpetuity.

  – To estimate the FCFE for the period FY 2019 through FY 2021, we relied on consensus analyst estimates for each component of FCFE.
  – Thereafter, future free cash flows from the period FY 2022 to FY 2028 were extrapolated to reach a normalised growth rate of 7.50% in the terminal period, which is based on 10-year zero coupon yield as of 31 December 2018 as published by CCIL.
- The FCFE for the index was then calculated by weighing the FCFEs of each of the index constituents by the weights of each constituent in the index as of 31 December 2018.
- The FCFE for the terminal period was then capitalised using the *Gordon Growth Model* to arrive at the terminal value as of 31 March 2028. The present value under this model is estimated as:

$$\text{Terminal value} = \frac{(FCFE_{(n-1)})*(1+g)}{(\text{Market return} - g)}$$

where

(n-1) is the period ending 31 March 2028

g is the long-term sustainable growth rate of 7.5%

(based on 10-year zero coupon yield as of 31 December 2018 as published by CCIL)

- Based on the above-estimated cash flows, we estimated the implied market return, which equates the present values of such cash flows to the adjusted market capitalisation of the index, as follows:

$$\text{Market capitalisation of Nifty 50} = \frac{\sum FCFE_n}{(1+\text{Market return})^n} + \text{Present value of terminal value}$$

where

Market capitalisation of Nifty 50 as of 31 December 2018 was adjusted for non-operating assets such as cash and cash equivalents, long-term investments, etc.

Conclusion

Based on the above estimates, we arrived at a market return of 15.17%, which was then used to arrive at the implied ERP under CAPM as follows:

$$ERP = \frac{\text{Market return - Risk free rate}}{\text{Beta}}$$

The risk-free rate considered as of 31 December 2018 was 7.50%, which is based on the 10-year zero coupon yield as published by CCIL. A beta of 1.0× for the market portfolio was then considered to conclude on the long-term ERP for India under the Forward-Looking approach, which was estimated as:

ERP=7.67%

Please note that the ERP as estimated under the Forward Estimate Approach is based on the risk-free rate prevailing as of the estimated date of 31 December 2018. While a minor change in the risk-free rate should not impact the fundamental expectation as arrived at under this approach, any significant change in the risk-free rate may lead to a material change in the ERP expectation, and thereby require re-estimation.

Conclusion – ERP

Based on the arithmetic mean of ERPs estimated under both the approaches as described above, we believe that an **ERP (rounded) of 6.75%** can be considered as a reasonable premium for investing in the equity markets in the Indian economy.

Acknowledgements

Sources

- Clearing Corporation of India Limited
- Thomson Reuters Database
- Capital IQ Database
- National Stock Exchange of India

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