Cost of Capital

Is it possible to calculate it?

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XLRI JAMSHEDPUR

1. What rate of return do you expect on your investment (savings) this year?
2. What rate will you actually earn?
3. Does it matter if it is a bank FD or a share of a mobile VAS player (say, Onmobile Global)?

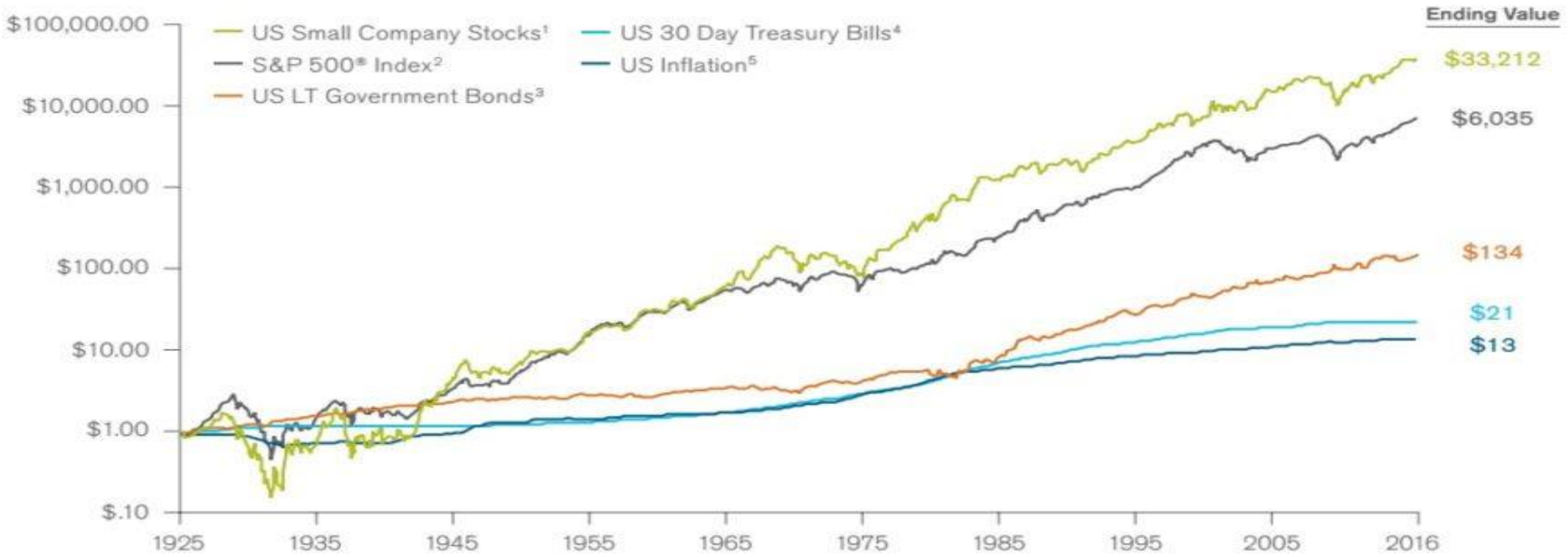
A $1 Investment in Different Types of Portfolios: 1926-2016

Hypothetical Long-Term Growth of $1

By looking at the value of a hypothetical investment of $1 into stocks, Government Bonds and Treasury Bills, you can see just how differently the $1 grew in each investment (1926–2016). Stocks outperformed Bonds and Bills over the long term, showing the growth potential equities have historically offered investors. Historically, however, Government Bonds and Treasury Bills have offered lower volatility, risk and return than equities.

Stocks, Bonds, Bills and Inflation

(as of 12/31/16)



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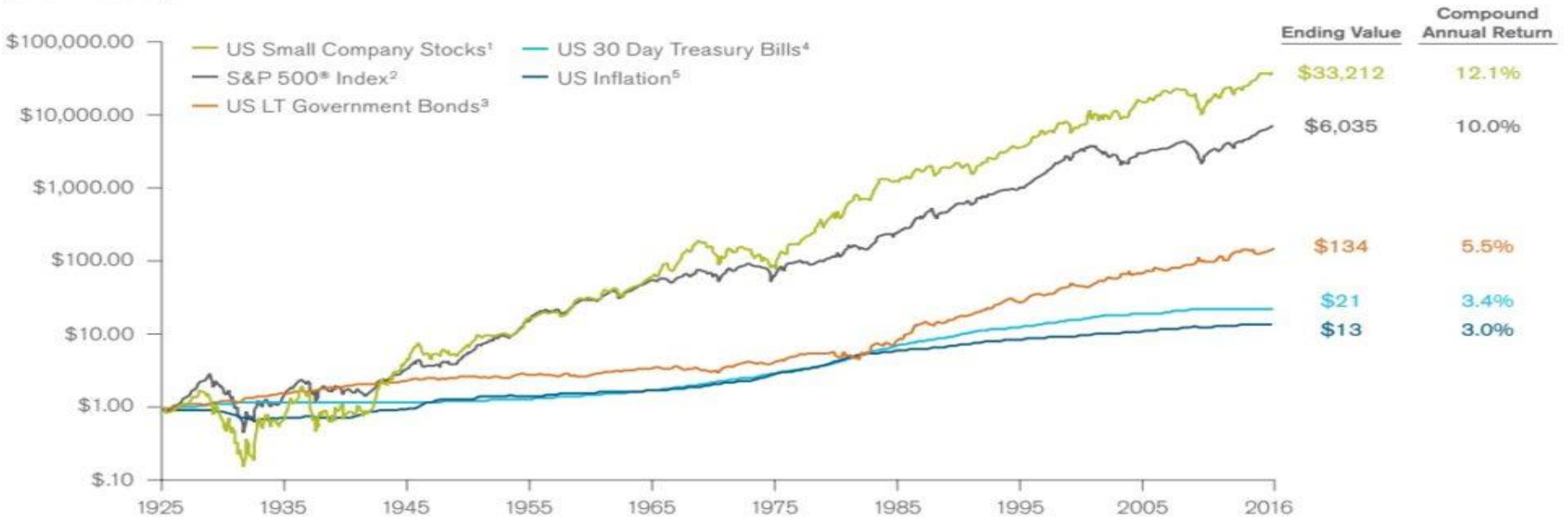
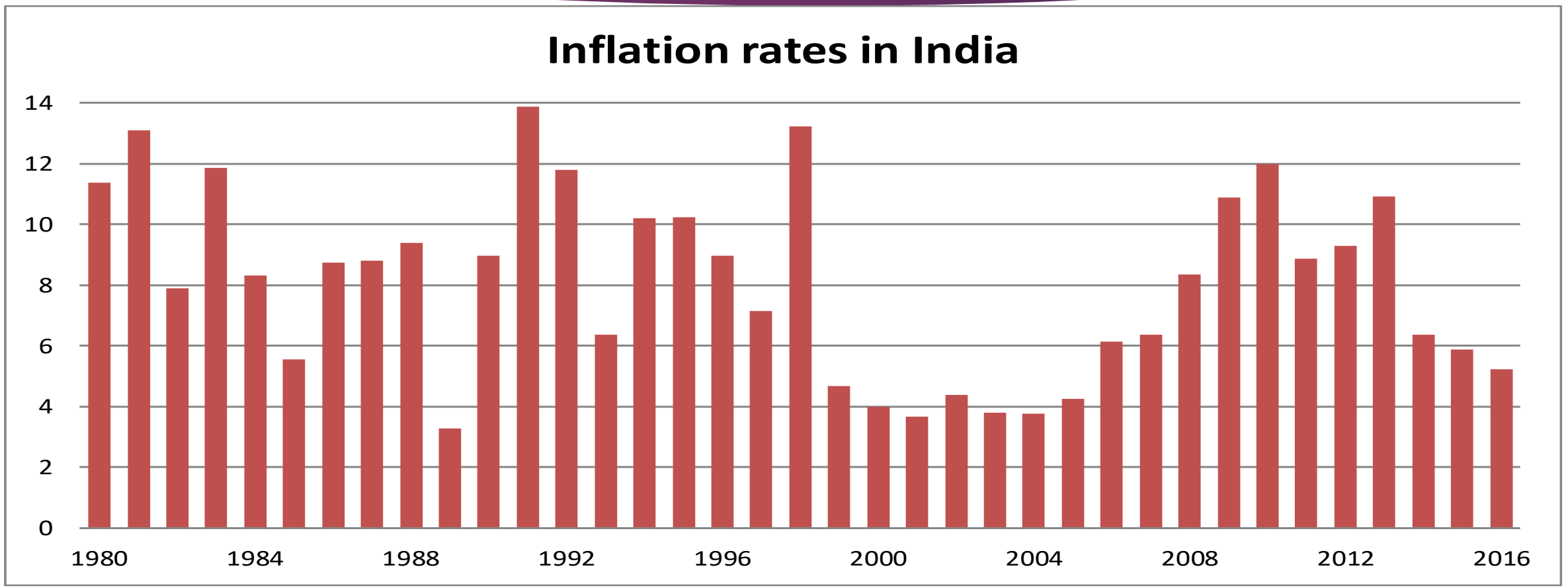


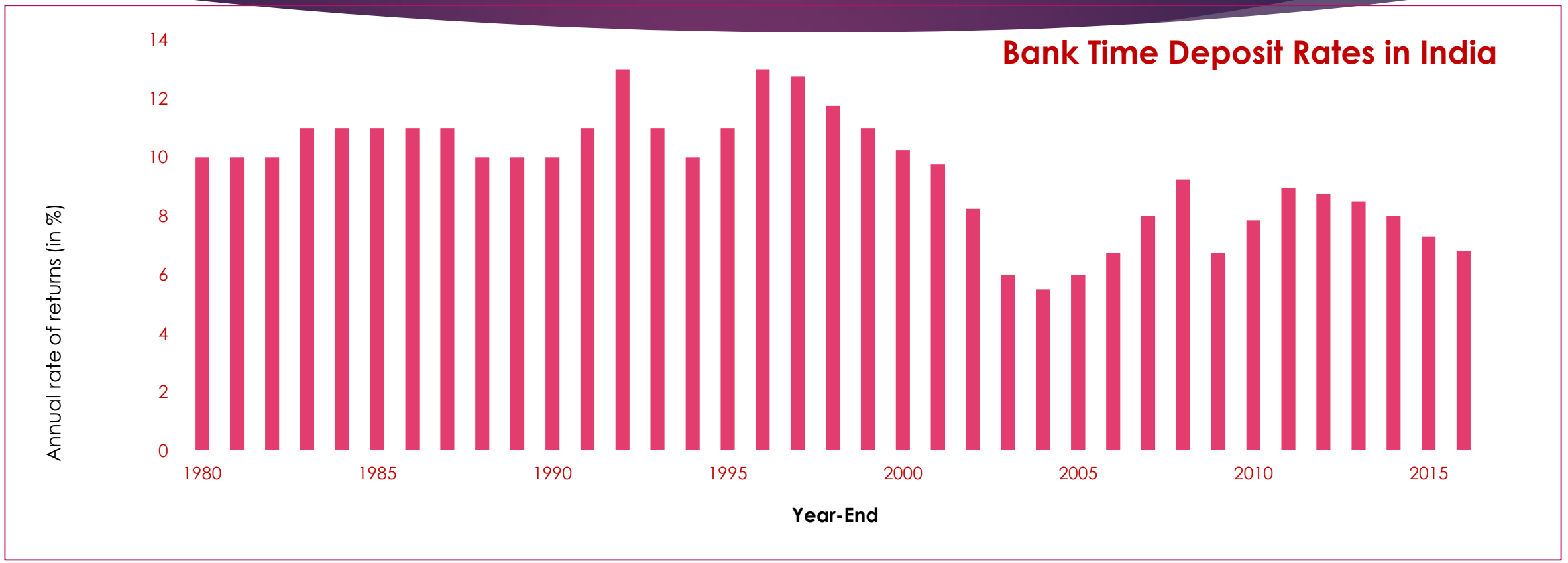
Annual Average Returns in India: 1979-2017

- Shares of Large Companies: 1➔337 (38 years, 1979-2017)
- Fixed Deposits (of private companies): 1➔50 (38 years, 1979-2017)
- Fixed Deposits of Banks: 1➔24 (35 years, 1979-2014)
- But, try looking at the yearly rates of return in each of the cases
- The most fluctuating will be stocks i.e., stock returns vary widely over time.

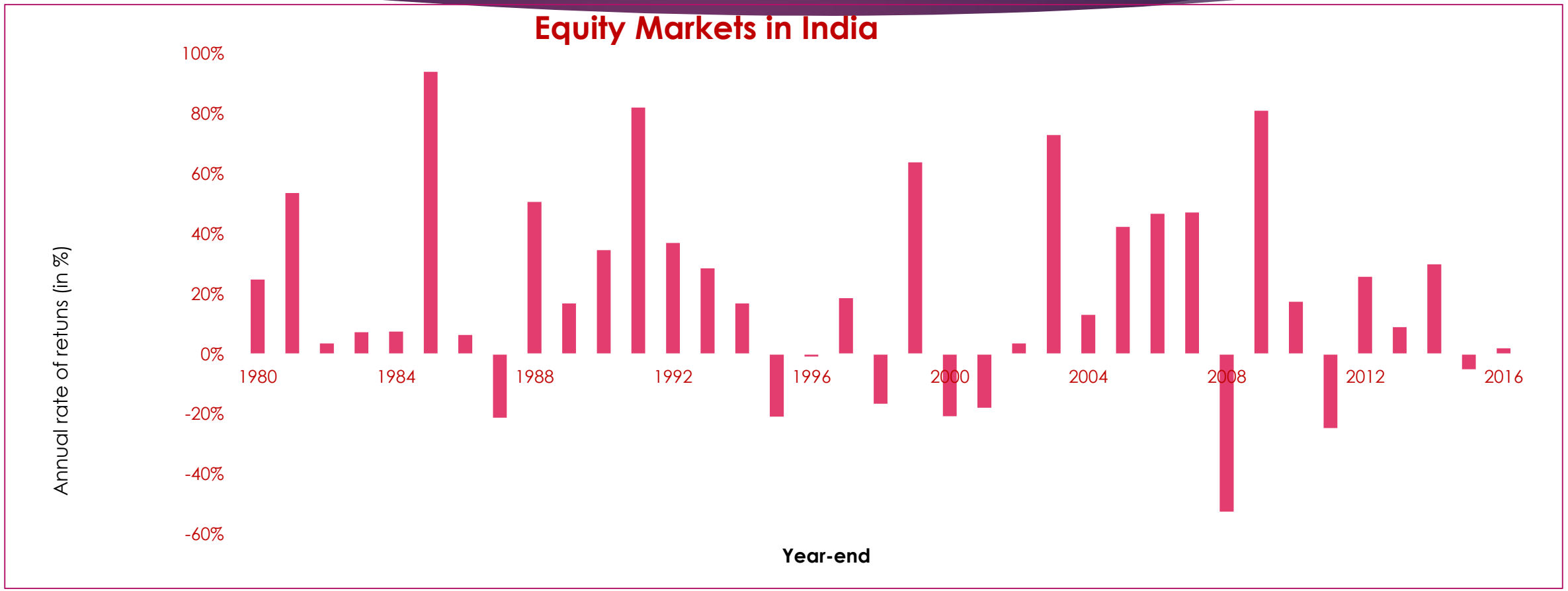
Inflation trends over the past 37 years, 1979-2016 (What about Expected Inflation?)



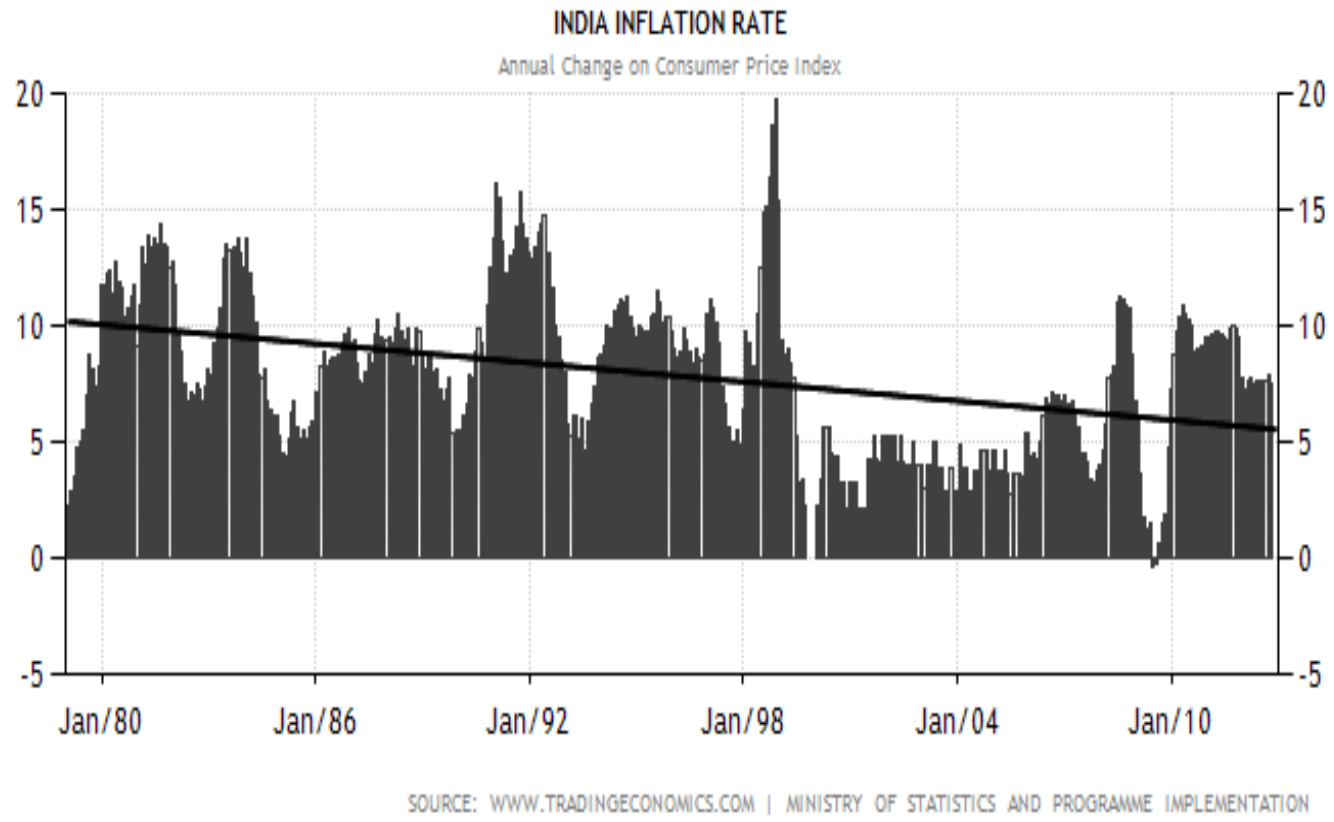
Bank Time Deposit Return Trends over the past 37 years, 1979-2016 (What about Expected Bank Time Deposit Returns?)



Equity Market Trends over the past 37 years, 1979-2016 (What about Expected Equity Market Returns?)



Annual Average Returns in India: 1979-2017



Returns on Investment in …

Bank Savings 3%
Insurance 5%
Inflation 7.5%
Fixed Deposit/Bonds 11.5%
Shares of Large firms 15.5%
Shares of Small firms 20.5%

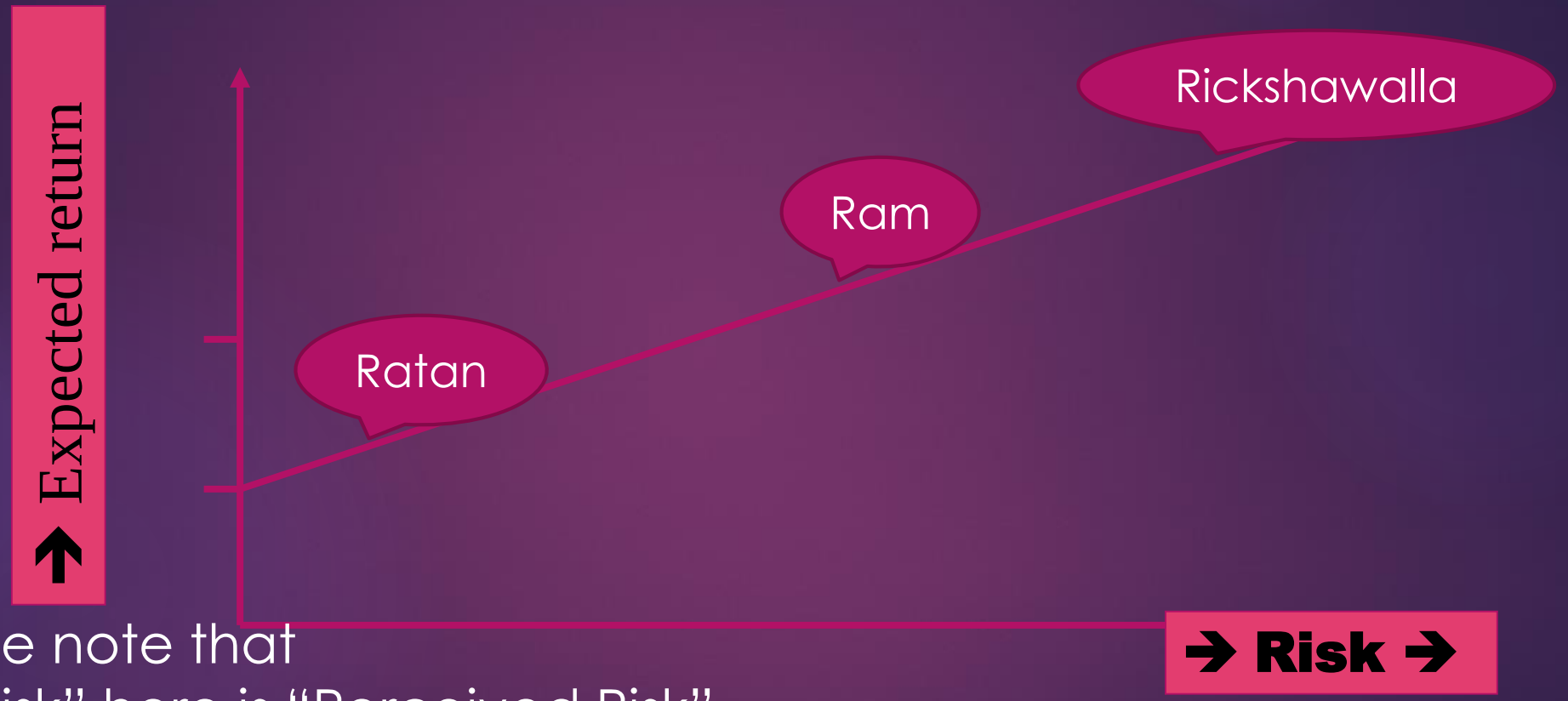
Risk and Return

- Unfortunately, if we try for future, the graph is expected risk and return (a.k.a. security market line)
- Investors demand far more from a riskier project
- Unfortunately, it is (really) difficult – to make such predictions with high degree of certainty.
- As a result, investors often use history as a basis for predicting the future.
- We will begin by evaluating the risk and return characteristics of individual assets, and end by looking at portfolios of assets.
- How do we find the risk of an individual asset (say, a equity share)

Risk and Return Defined

- In the context of business and finance, risk is defined as the chance of suffering a financial loss.
- Assets (real or financial) which have a greater chance of loss are considered more risky than those with a lower chance of loss.
- Risk may be used interchangeably with the term uncertainty to refer to the variability of returns associated with a given asset.
- Return represents the total gain or loss on an investment

Ratan Tata, Ram Kakani, Rickshawalla …



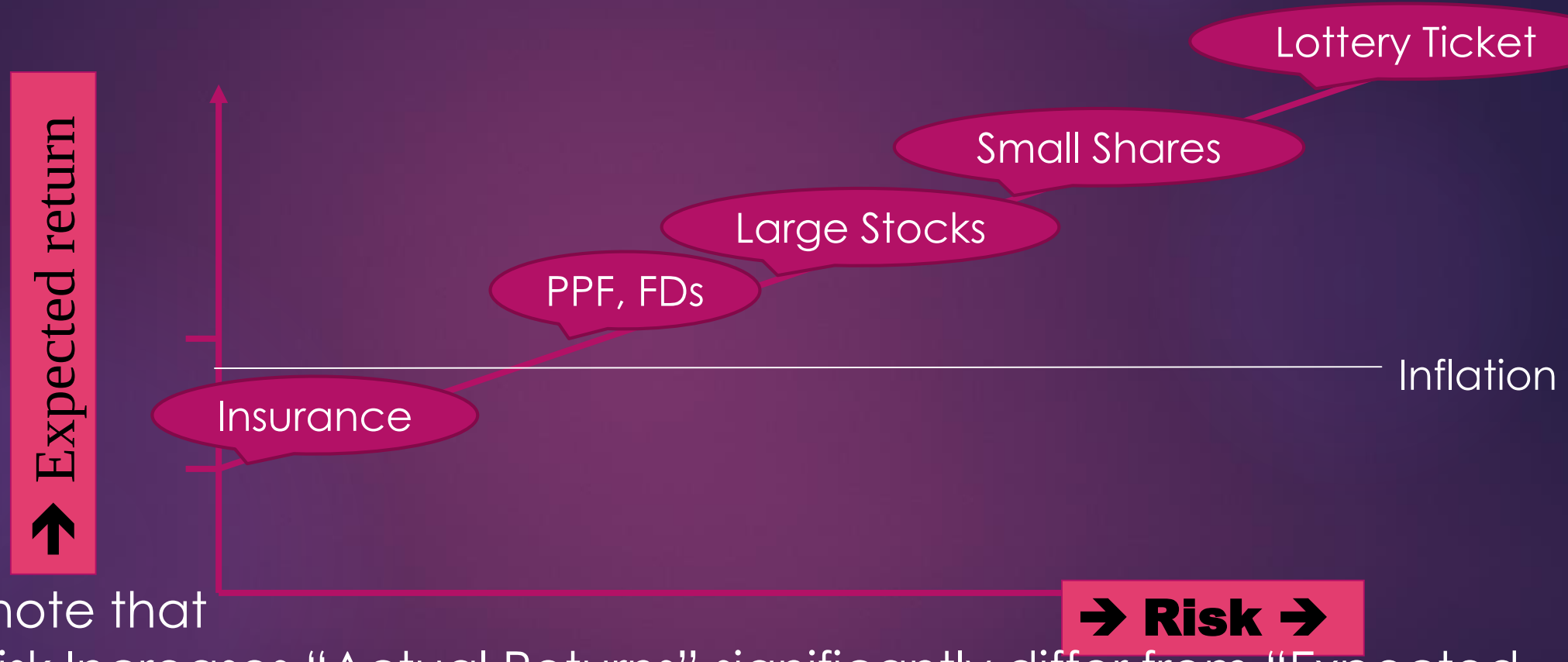
Please note that

(a)"Risk" here is "Perceived Risk"

(b) "Expected Return" is NOT "Actual Return"

(c) "Investment Decisions" are made based on the "Expected Return"

Risk and Return ….



Please note that

(a) As Risk Increases "Actual Returns" significantly differ from "Expected Returns"

(b) Thus, it is important to not get carried away by High Risk Instruments

Capital Asset Pricing Model (CAPM)

- To measure the amount of systematic risk an asset has, they simply regressed the returns for the "market portfolio" -- the portfolio of ALL assets -- against the returns for an individual asset.
- The slope of the regression line -- beta -- measures an assets systematic (non-diversifiable) risk.
- In general, cyclical companies like auto companies have high betas while relatively stable companies, like public utilities,have low betas.
- Let's look at an example to see how this works.

Capital Asset Pricing Model (CAPM)

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.993698							
				F	*ignificance F*			
				235.7556	0.0006			
Total			2000					
	Coeffic		*ard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	-3.7751		2.018166	-1.87057	0.158163	-10.1978	2.64758	-10.1978	2.64758
10	1.917349		0.124873	15.35433	0.0006	1.519946	2.314753	1.519946	2.314753

This slide is the result of a regression using the Excel. The slope of the regression (beta) in this case is 1.92. Apparently, this stock has a considerable amount of systematic risk.

What is Beta?

An index of **systematic risk**.

It measures the sensitivity of a stock's returns to changes in returns on the market portfolio.

The **beta** for a portfolio is simply a weighted average of the individual stock betas in the portfolio.

Capital Asset Pricing Model (CAPM)

- The **required return** for *all* assets is composed of two parts: the risk-free rate and a risk premium.

The risk premium is a function of both market conditions and the asset itself.

The risk-free rate (r_f) is usually estimated from the return on Govt. Treasury bills

Capital Asset Pricing Model (CAPM)

- The **risk premium** for a stock is composed of two parts:
  - The **Market Risk Premium** which is the return required for investing in any risky asset rather than the risk-free rate
  - **Beta**, a risk coefficient which measures the sensitivity of the particular stock's return to changes in market conditions.

Capital Asset Pricing Model (CAPM)

- After estimating beta, which measures a specific asset's systematic risk, it is relatively easy to estimate other variables (may be obtained to calculate an asset's required return) …

$$K_e = R_f + ß\,[R_m - R_f], \text{ where}$$

K_e = an asset's expected or required return,

R_f = the risk free rate of return,

$ß$ = an asset or portfolio's beta

R_m = the expected return on the market portfolio.

Capital Asset Pricing Model (CAPM)

Example

Calculate the required return for HDFC Bank shares assuming it has a beta of 1.2, the rate on G-Secs. is 7%, and the expected return for the BSE Sensex is 12%.

$$K_e = 7 + 1.2\ [12\% - 7\%]$$

$$K_e = 13\%$$

Capital Asset Pricing Model (CAPM)

Example

Calculate the required return for ICICI Bank shares assuming it has a beta of 1.9, the rate on G-Secs. is 7%, and the expected return for the BSE Sensex is 12%.

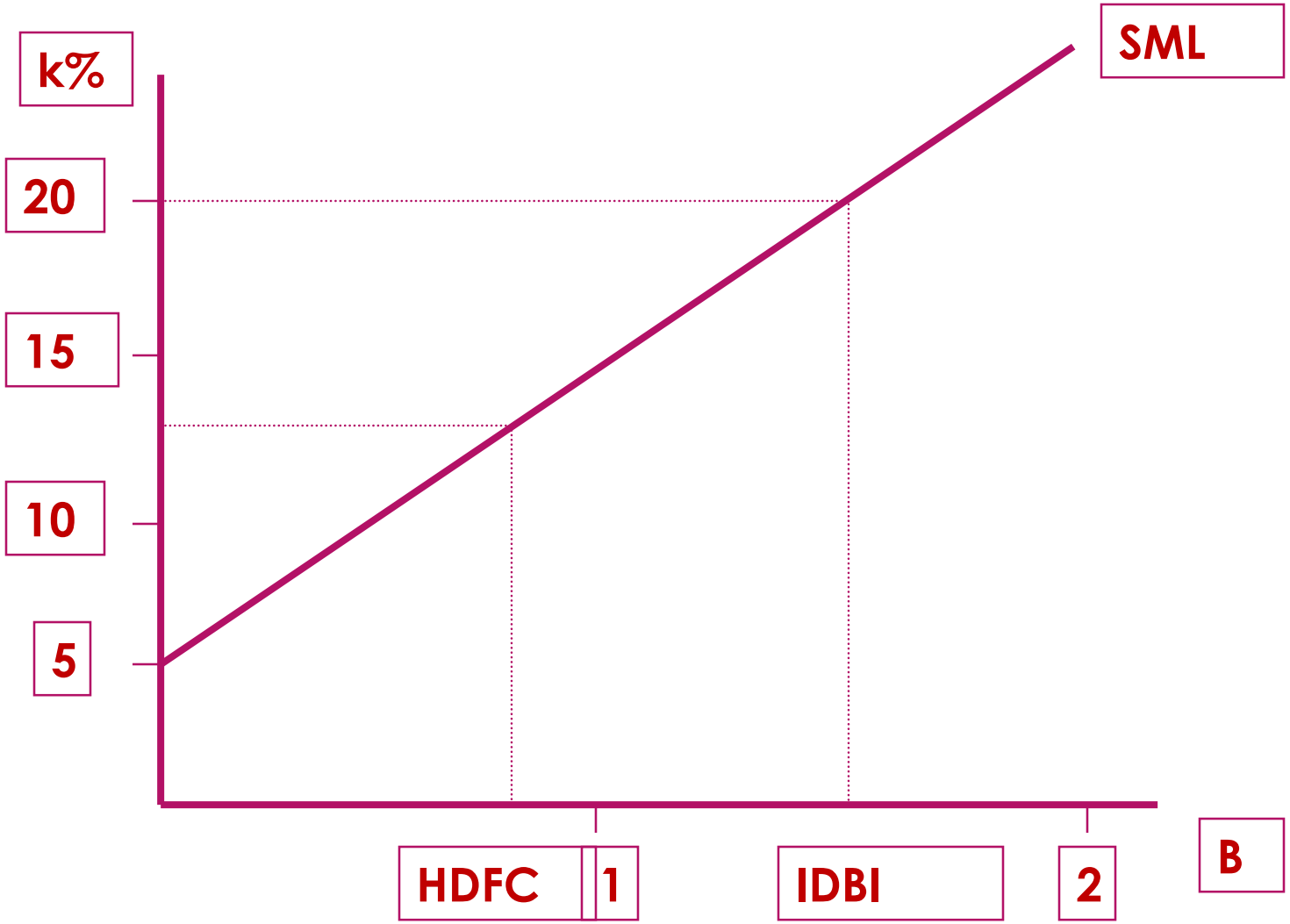
$$K_e = 7 + 1.9\ [12\% - 7\%]$$

$$K_e = 16.5\%$$

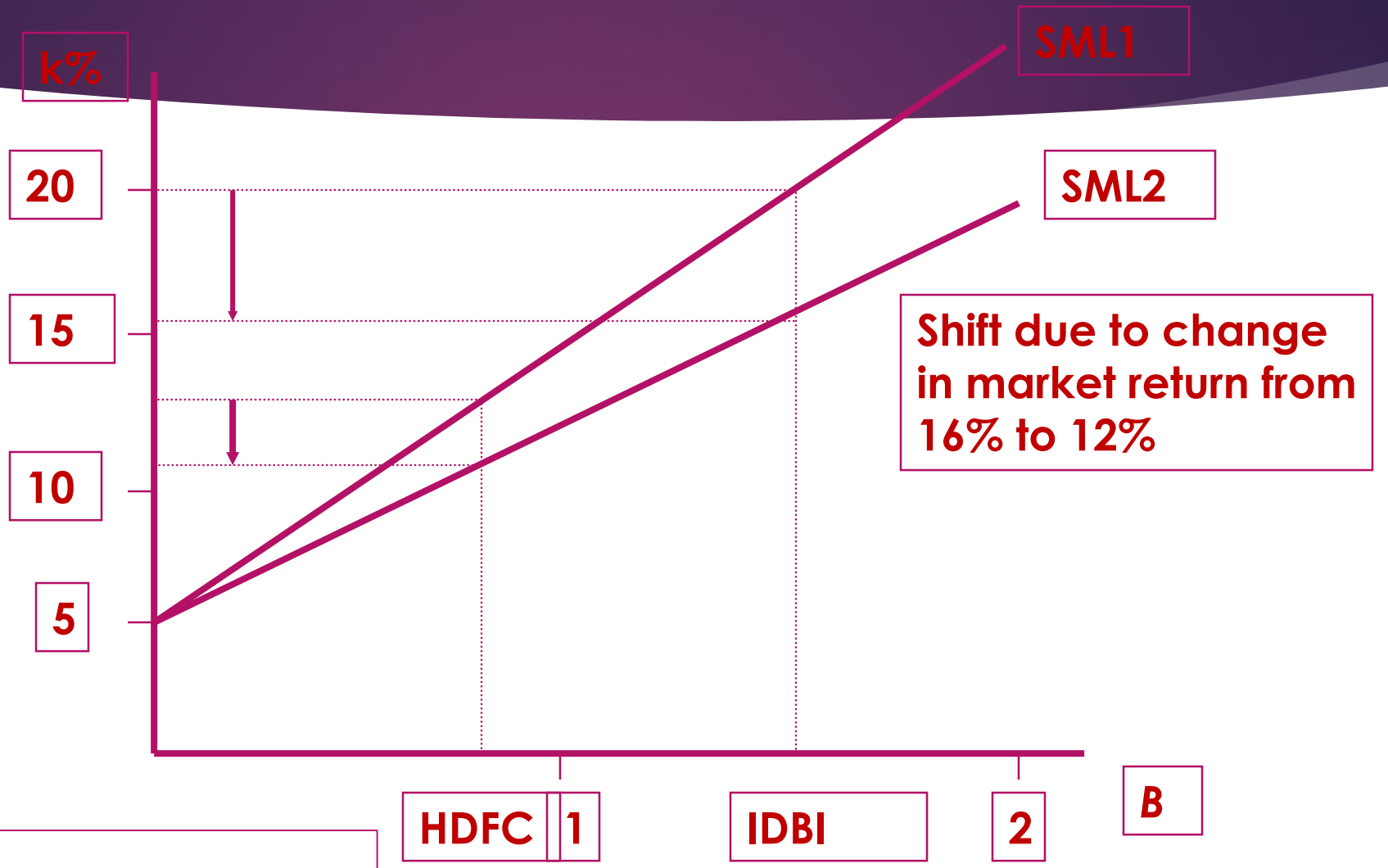
Capital Asset Pricing Model (CAPM)

Graphically

Capital Asset Pricing Model (CAPM)

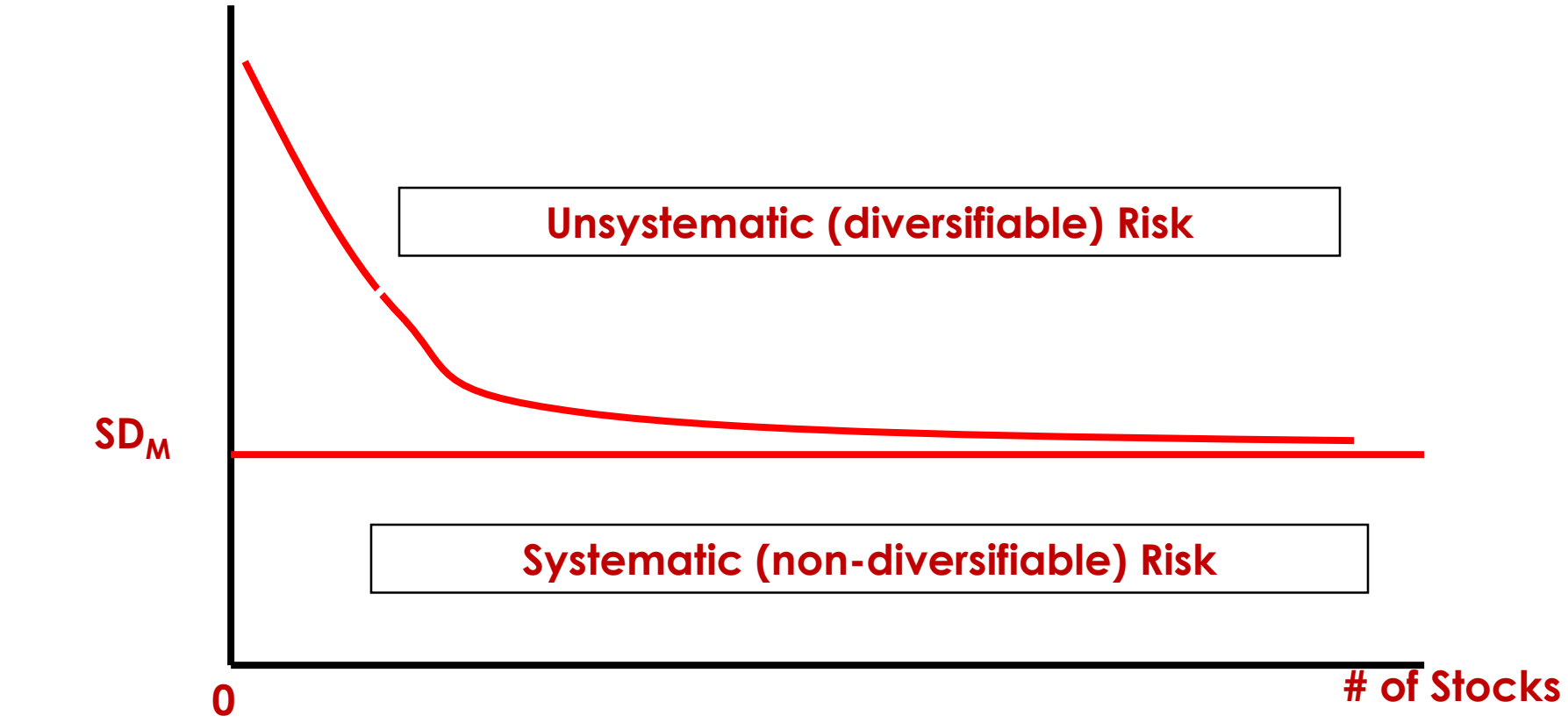


Capital Asset Pricing Model (CAPM)



Portfolios of Assets

Portfolio Risk
(Adding Assets to a Portfolio)



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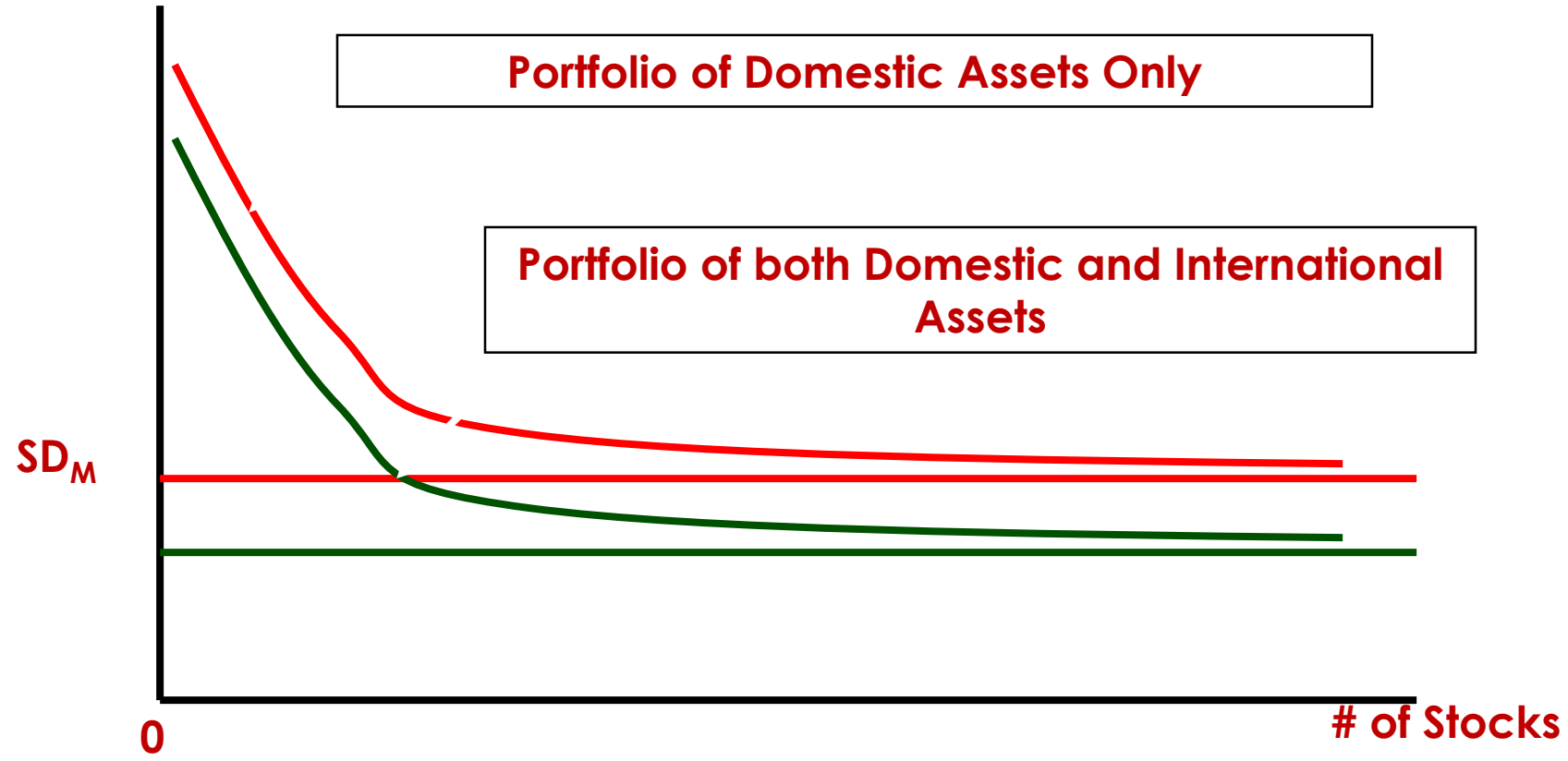

THANK YOU