COST OF CAPITAL: REVISITING BASICS & GETTING PERSPECTIVE

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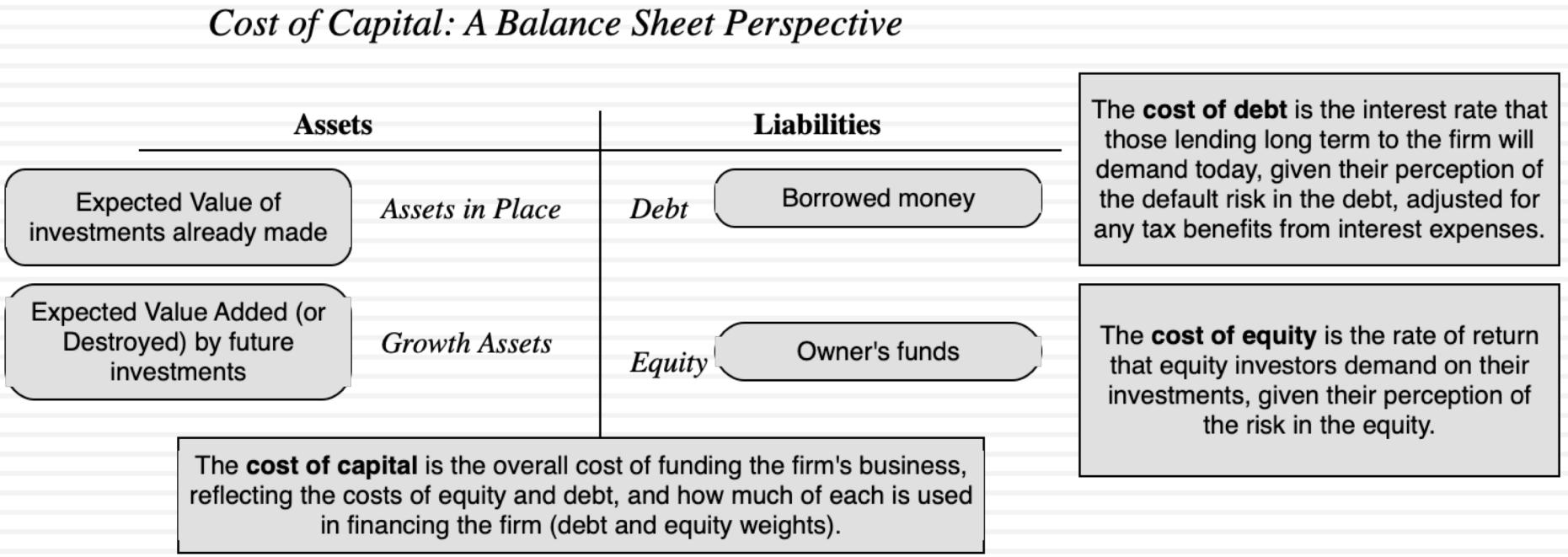
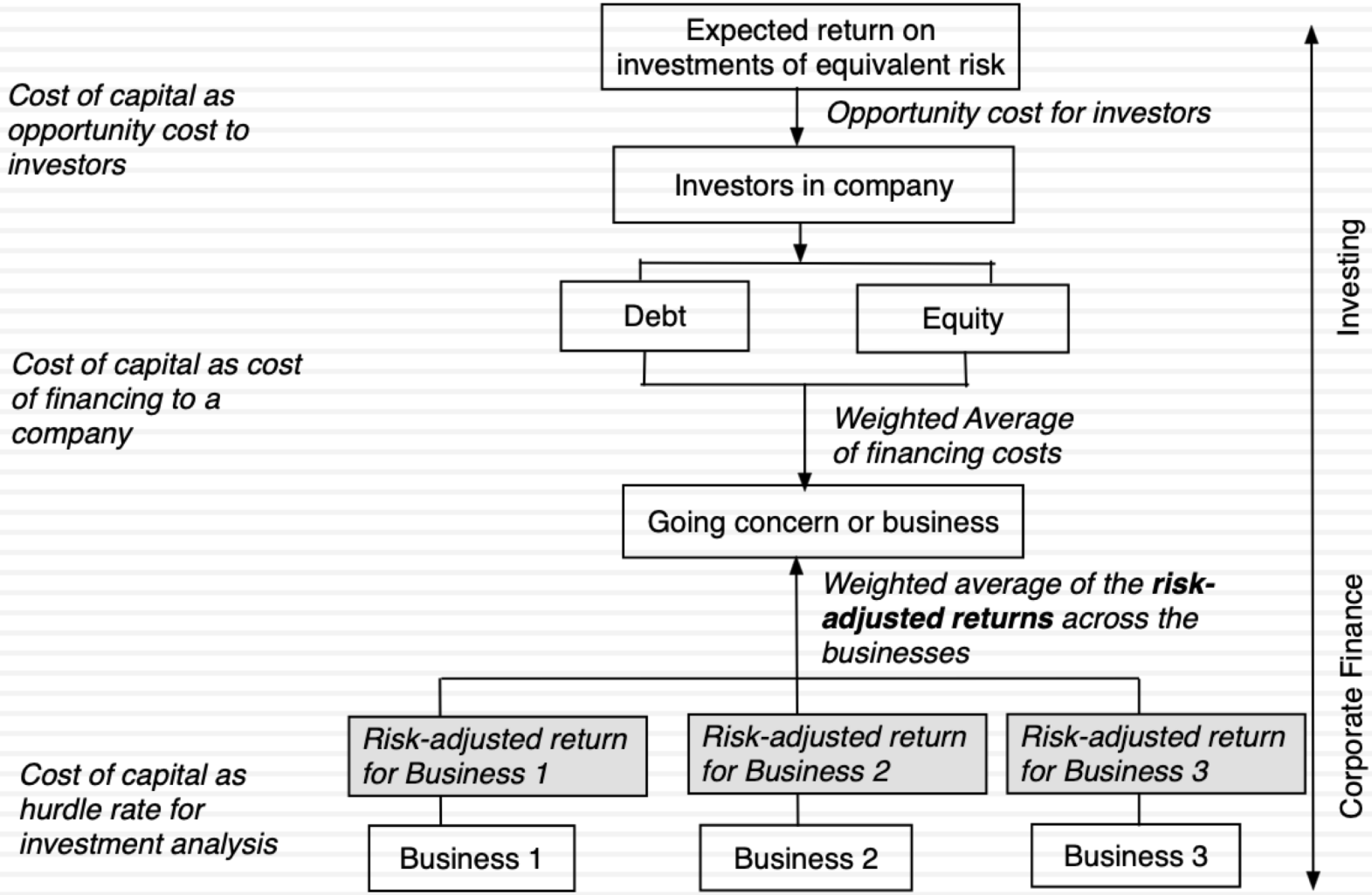
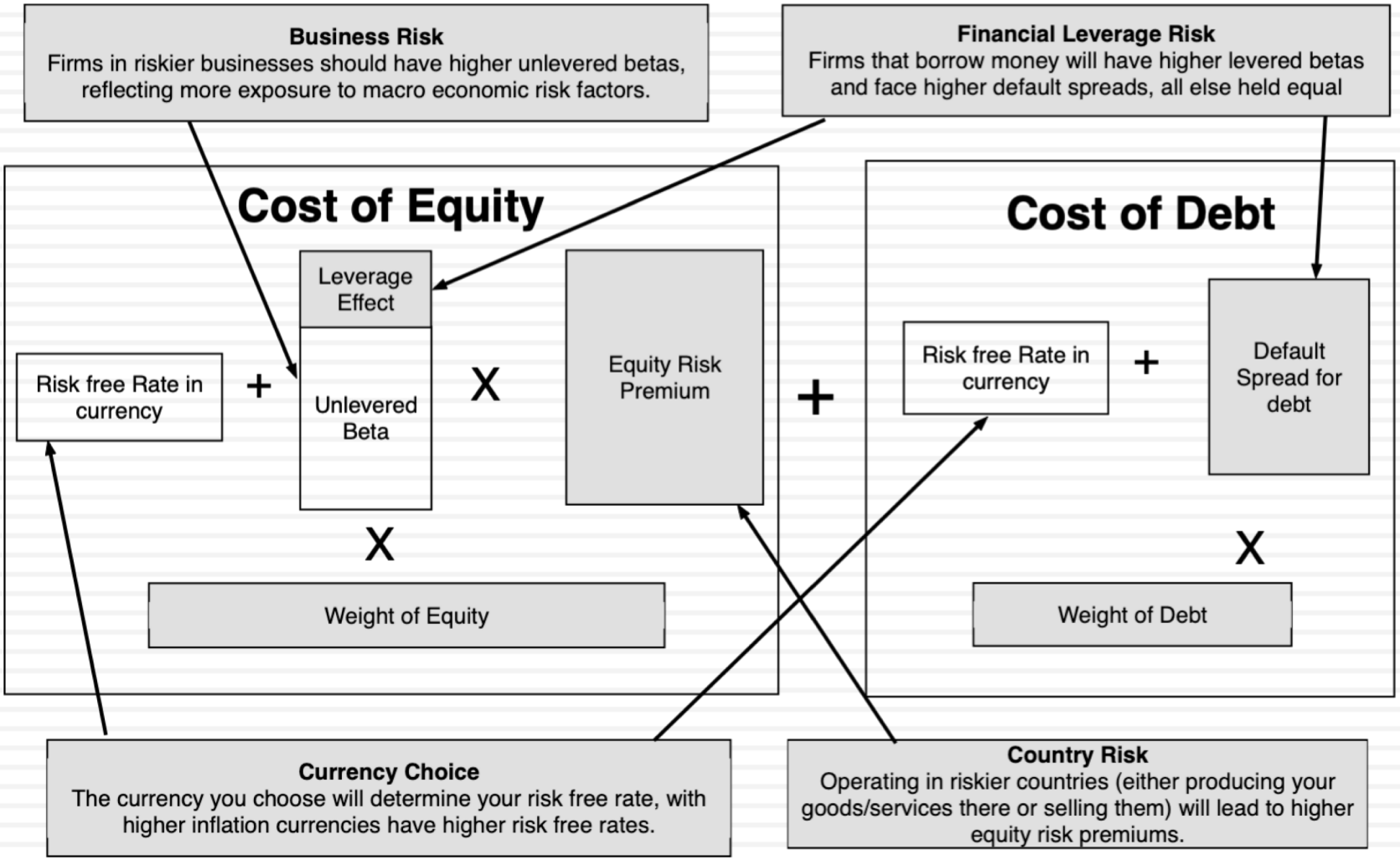
Cost of Capital: A Financial Balance Sheet Perspective



The Swiss Army Knife



Every Risk has a place



1. Business Risk

- If you are diversified, I argued that you would measure the risk in an investment with the covariance of that investment with the market, or in its standardized form, its beta.
- To get the beta for a company, then, you can adopt one of two approaches.
  - The first, and the one that is taught in every finance class, is to run a regression of returns on the stock against a market index and to use the regression beta.
  - The second, and my preferred approach, is to estimate a beta by looking at the business or businesses a company operates in, and taking a weighted average of the betas of companies in that business.

2. Financial Leverage

- Debt Ratio: Th mix of debt and equity that you use represents the weights in your cost of capital.
- Beta Effect: As you borrow money, your equity will become riskier, because it is a residual claim, and having more interest expenses will make that claim more volatile.

Levered Beta = Unlevered Beta (1 + (1- Tax Rate) (Debt/Equity))

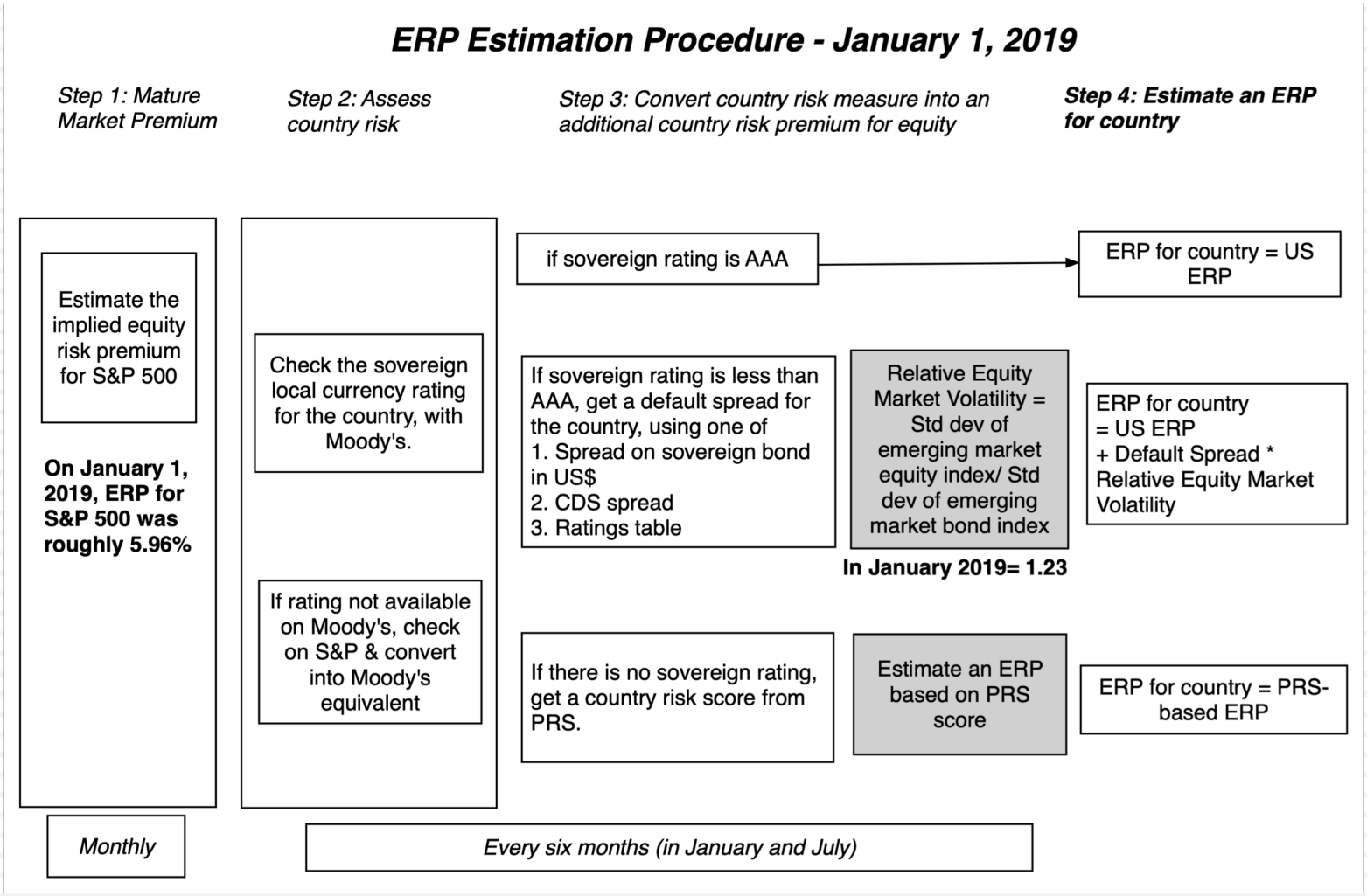
- Cost of Debt: The cost of debt, which is set by lenders based upon how much default risk that they see in a company. To the extent that the tax law is tilted towards debt, the after-tax cost of borrowing will reflect that tax benefit.

Cost of Debt = (Risk free Rate + Default Spread) (1 – Tax Rate)

3. Country Risk

- Sovereign Ratings and Default Spreads: The vast majority of countries have sovereign ratings, measuring their default risk.
- Sovereign CDS spreads: The Credit Default Swap (CDS) market is one where you can buy insurance against sovereign default, and it offers a market-based estimate of sovereign risk.
- Country Risk Premiums: I start with the default spreads, but I add a scaling factor to reflect the reality that equities are riskier than government bonds to come up with country risk premiums. The scaling factor that I use is obtained by dividing the volatility of an emerging market equity index by the volatility of emerging market bonds.

ERP Estimation in January 2019



ERP : Jan 2019

Andorra	8.60%	2.64%	Italy	9.02%	3.06%
Austria	6.51%	0.55%	Jersey (States of)	6.80%	0.84%
Belgium	6.80%	0.84%	Liechtenstein	5.96%	0.00%
Cyprus	10.13%	4.17%	Luxembourg	5.96%	0.00%
Denmark	5.96%	0.00%	Malta	7.63%	1.67%
Finland	6.51%	0.55%	Netherlands	5.96%	0.00%
France	6.65%	0.69%	Norway	5.96%	0.00%
Germany	5.96%	0.00%	Portugal	9.02%	3.06%
Greece	14.99%	9.03%	Spain	8.18%	2.22%
Guernsey (States of)	6.80%	0.84%	Sweden	5.96%	0.00%
Iceland	7.63%	1.67%	Switzerland	5.96%	0.00%
Ireland	7.14%	1.18%	Turkey	10.96%	5.00%
Isle of Man	6.65%	0.69%	United Kingdom	6.65%	0.69%
			Western Europe	**7.11%**	**1.15%**

Canada	5.96%	0.00%
United States	5.96%	0.00%
North America	**5.96%**	**0.00%**

Caribbean	**13.61%**	**7.65%**

Argentina	13.60%	7.64%
Belize	14.99%	9.03%
Bolivia	10.96%	5.00%
Brazil	10.13%	4.17%
Chile	6.94%	0.98%
Colombia	8.60%	2.64%
Costa Rica	12.21%	6.25%
Ecuador	14.99%	9.03%
El Salvador	16.37%	10.41%
Guatemala	9.43%	3.47%
Honduras	12.21%	6.25%
Mexico	7.63%	1.67%
Nicaragua	13.60%	7.64%
Panama	8.60%	2.64%
Paraguay	9.43%	3.47%
Peru	7.63%	1.67%
Suriname	13.60%	7.64%
Uruguay	8.60%	2.64%
Venezuela	28.10%	22.14%
Central and South America	**10.61%**	**4.65%**

Angola	14.99%	9.03%
Benin	12.21%	6.25%
Botswana	7.14%	1.18%
Burkina Faso	13.60%	7.64%
Cameroon	13.60%	7.64%
Cape Verde	13.60%	7.64%
Congo (DR)	14.99%	9.03%
Congo (Rep)	18.46%	12.50%
Côte d'Ivoire	10.96%	5.00%
Egypt	14.99%	9.03%
Ethiopia	12.21%	6.25%
Gabon	16.37%	10.41%
Ghana	14.99%	9.03%
Kenya	13.60%	7.64%
Morocco	9.43%	3.47%
Mozambique	19.83%	13.87%
Namibia	9.43%	3.47%
Nigeria	13.60%	7.64%
Rwanda	13.60%	7.64%
Senegal	10.96%	5.00%
South Africa	9.02%	3.06%
Swaziland	13.60%	7.64%
Tanzania	12.21%	6.25%
Tunisia	13.60%	7.64%
Uganda	13.60%	7.64%
Zambia	16.37%	10.41%
Africa	**12.63%**	**6.67%**

Albania	12.21%	6.25%
Armenia	12.21%	6.25%
Azerbaijan	10.13%	4.17%
Belarus	14.99%	9.03%
Bosnia and Herzegovina	14.99%	9.03%
Bulgaria	8.60%	2.64%
Croatia	10.13%	4.17%
Czech Republic	6.94%	0.98%
Estonia	6.94%	0.98%
Georgia	10.13%	4.17%
Hungary	9.02%	3.06%
Kazakhstan	9.02%	3.06%
Kyrgyzstan	13.60%	7.64%
Latvia	7.63%	1.67%
Lithuania	7.63%	1.67%
Macedonia	10.96%	5.00%
Moldova	14.99%	9.03%
Montenegro	12.21%	6.25%
Poland	7.14%	1.18%
Romania	9.02%	3.06%
Russia	9.43%	3.47%
Serbia	10.96%	5.00%
Slovakia	7.14%	1.18%
Slovenia	8.18%	2.22%
Tajikistan	9.43%	3.47%
Ukraine	18.46%	12.50%
Eastern Europe & Russia	**9.24%**	**3.28%**

Abu Dhabi	6.65%	0.69%
Bahrain	13.60%	7.64%
Iraq	16.37%	10.41%
Israel	6.94%	0.98%
Jordan	12.21%	6.25%
Kuwait	6.65%	0.69%
Lebanon	14.99%	9.03%
Oman	9.02%	3.06%
Qatar	6.80%	0.84%
Ras Al Khaimah (Emirate of)	7.14%	1.18%
Saudi Arabia	6.94%	0.98%
Sharjah	7.63%	1.67%
United Arab Emirates	6.65%	0.69%
Middle East	**7.96%**	**2.00%**

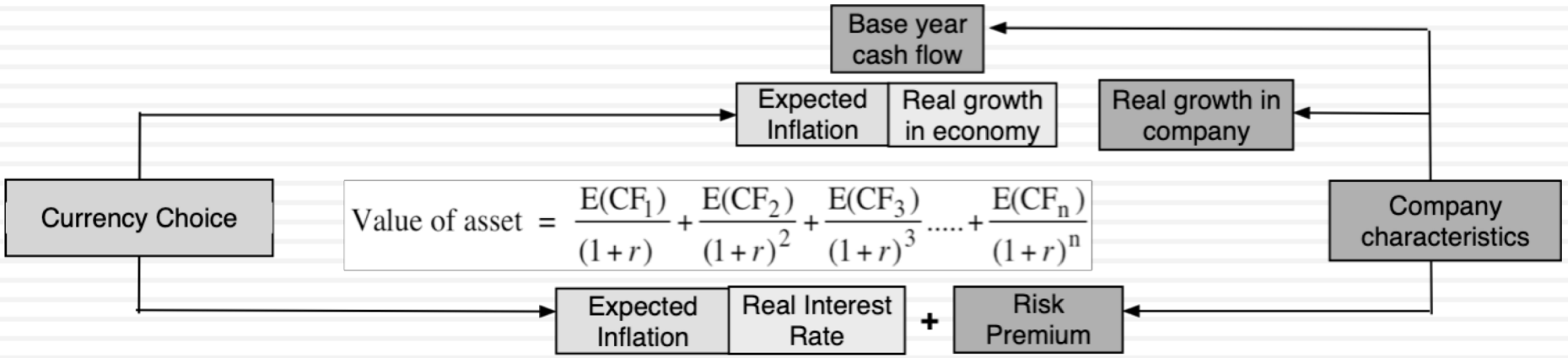
Country	*PRS*	*ERP*	*CRP*	*Country*	*PRS*	*ERP*	*CRP*
Algeria	65	13.60%	7.64%	Malawi	61	16.37%	**10.41%**
Brunei	80.5	6.94%	0.98%	Mali	61.3	16.37%	10.41%
Gambia	63.3	14.99%	9.03%	Myanmar	62	16.37%	10.41%
Guinea	54.3	22.61%	16.65%	Niger	54.5	22.61%	16.65%
Guinea-Bissau	62	16.37%	10.41%	Sierra Leone	54.8	22.61%	16.65%
Guyana	66.5	12.21%	6.25%	Somalia	53.5	22.61%	16.65%
Haiti	60	18.46%	12.50%	Sudan	38.8	28.10%	22.14%
Iran	69.3	10.13%	4.17%	Syria	51.8	22.61%	16.65%
Korea, D.P.R.	53	22.61%	16.65%	Togo	61	16.37%	10.41%
Liberia	53.5	22.61%	16.65%	Yemen, Republic	48	28.10%	22.14%
Libya	66.5	12.21%	6.25%	Zimbabwe	59.3	18.46%	12.50%
Madagascar	64	14.99%	9.03%				

Bangladesh	10.96%	5.00%
Cambodia	13.60%	7.64%
China	6.94%	0.98%
Fiji	10.96%	5.00%
Hong Kong	6.65%	0.69%
India	8.60%	2.64%
Indonesia	8.60%	2.64%
Japan	6.94%	0.98%
Korea	6.65%	0.69%
Macao	6.80%	0.84%
Malaysia	7.63%	1.67%
Maldives	13.60%	7.64%
Mauritius	8.18%	2.22%
Mongolia	14.99%	9.03%
Pakistan	14.99%	9.03%
Papua New Guinea	13.60%	7.64%
Philippines	8.60%	2.64%
Singapore	5.96%	0.00%
Solomon Islands	14.99%	9.03%
Sri Lanka	12.21%	6.25%
Taiwan	8.18%	2.22%
Thailand	8.18%	2.22%
Vietnam	10.96%	5.00%
Asia	**7.43%**	**1.47%**

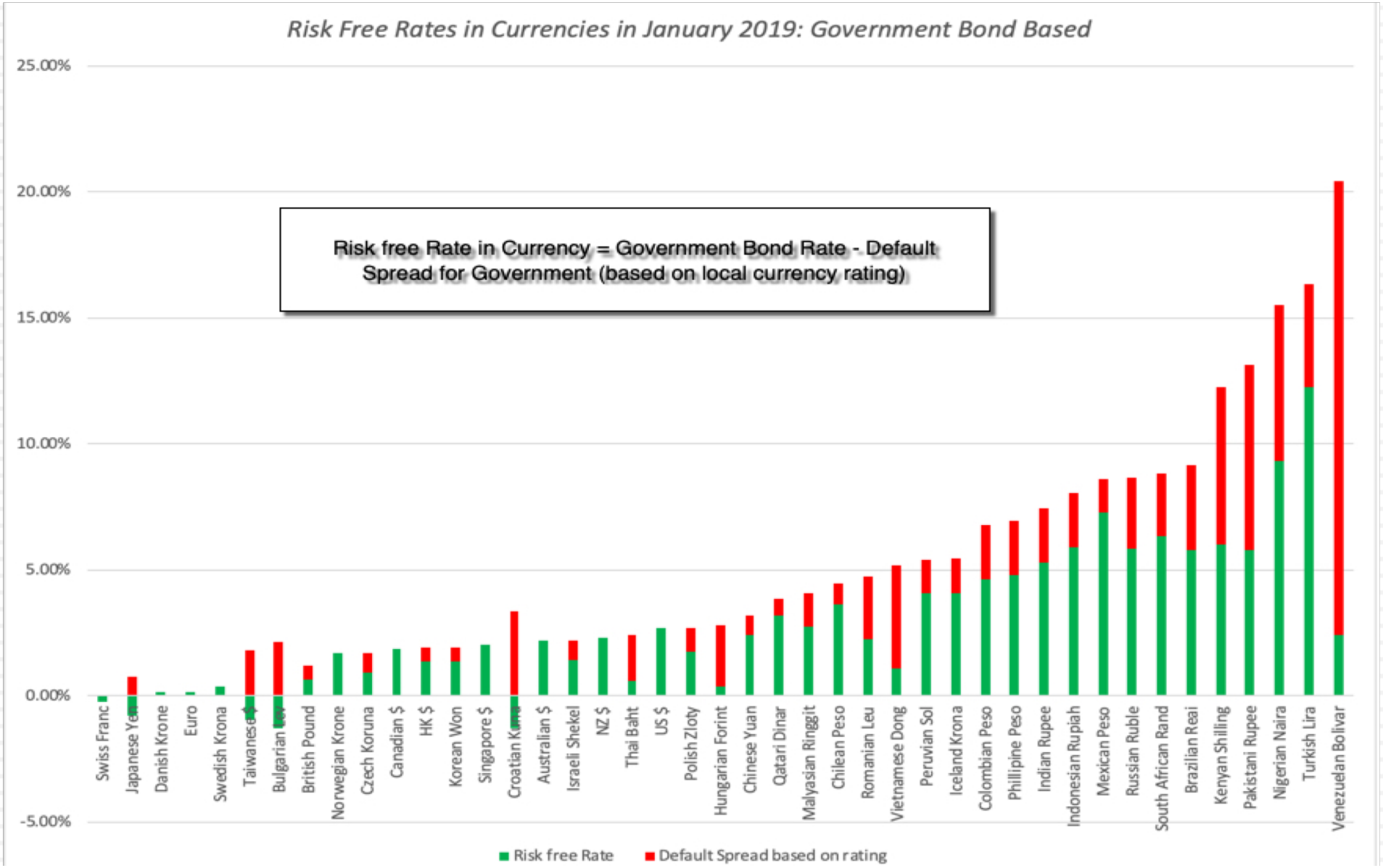
Australia	5.96%	0.00%
Cook Islands	12.21%	6.25%
New Zealand	5.96%	0.00%
Australia & New Zealand	**5.96%**	**0.00%**

Black #: Total ERP
Red #: Country risk premium
Regional #: GDP weighted average

4. Currency Risk (or is it Choice)



Approach 1: Risk free Rate



Approach 2: Differential Inflation

- You estimate the cost of capital in a currency that you feel comfortable with (in terms of estimating risk free rates and risk premiums) and then add on or incorporate the differential inflation between that currency and the local currency that you want to convert the cost of capital to.
- Thus, to convert the cost of capital in US $ terms to a different currency, you would do the following:

$$Cost\ of\ Capital_{LC} = (1 + Cost\ of\ Capital_{US\$}) * \frac{(1 + Inflation\ Rate_{LC})}{(1 + Inflation\ Rate_{US\$})} - 1$$

Proposition 1: A hurdle rate is an opportunity cost, not a funding cost

- Most people, when asked what a cost of capital is, will respond with the answer that it is the cost of raising capital. In the context of its usage as a hurdle rate, that is not true.
- It is an opportunity cost, a rate of return that you (as a company or investor) can earn on other investments in the market of equivalent risk.

Application 1: The Beta for a Target Firm!

- When valuing a target firm in an acquisition, which of the following unlevered betas should you use to come up with your cost of equity?
  1. Beta of the acquiring firm
  2. Beta of the target firm
  3. Weighted average (by market value) of the betas of the two firms
  4. Simple average of the betas of the two firms

Application 2: The Debt Ratio to use

- In computing the cost of capital to use in valuing the target firm, which of the following debt choices should you make in your computation:
  1. The debt ratio and the cost of debt of acquiring firm
  2. The debt ratio and the cost of debt of the target firm
  3. The debt ratio used in the acquisition, with the cost of debt used for the acquisition
  4. The optimal debt ratio and cost of debt of the target firm
  5. The debt ratio for the combined firm after the acquisition, and the cost of debt after

Proposition 2: A company-wide hurdle rate can be misleading and dangerous

- In corporate finance, the hurdle rate becomes the number to beat, when you do investment analysis. Most companies claim to have a corporate hurdle rate, a number that all projects that are assessed within the company get measured against.
- If your company operates in only one business and one country, this may work, but to the extent that companies operate in many businesses across multiple countries, there can be no one hurdle rate. Even if you use only one currency in analysis, your cost of capital will be a function of which business a project is in, and what country it is aimed at.
- The consequences of not making these differential adjustments will be that your safe businesses will end up subsidizing your risky businesses, and over time, both will be hurt, in what I term the "curse of the lazy conglomerate".

Test: A Multi Business Company!

	Cost of equity	Cost of debt	Marginal tax rate	After-tax cost of debt	Debt ratio	Cost of capital
Media Networks	9.07%	3.75%	36.10%	2.40%	9.12%	8.46%
Parks & Resorts	7.09%	3.75%	36.10%	2.40%	10.24%	6.61%
Studio Entertainment	9.92%	3.75%	36.10%	2.40%	17.16%	8.63%
Consumer Products	9.55%	3.75%	36.10%	2.40%	53.94%	5.69%
Interactive	11.65%	3.75%	36.10%	2.40%	29.11%	8.96%
Disney Operations	8.52%	3.75%	36.10%	2.40%	11.58%	7.81%

Disney has some major investments coming up in setting up a streaming competitor to Netflix. What cost of capital would you use in your assessment?

a. Disney's cost of capital as a company
b. Disney's media networks cost of capital
c. Other

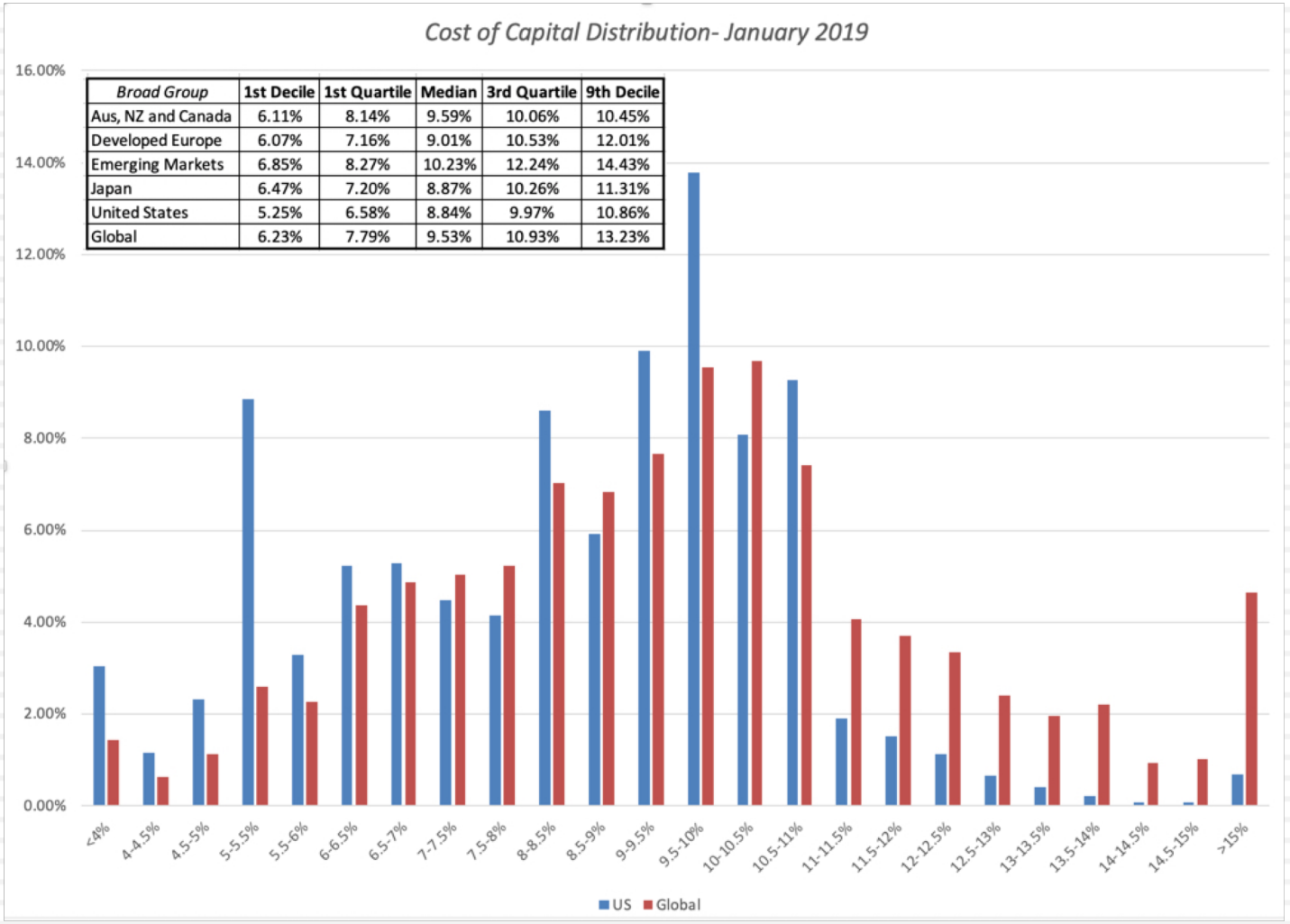
Proposition 3: Currency is a choice, but one that should not change outcomes

- If you follow the consistency rule on currency, incorporating inflation into both cash flows and discount rates, your analyses should be currency neutral.
- In other words, a project that looks like it is a bad project, when the analysis is done in US dollar terms, cannot become a good project, just because you decide to do the analysis in Indian rupees.
- If you do get divergent answers with different currencies, it is because there are inflation inconsistencies in your assessments of discount rates and cash flows.

Proposition 4: Your cost of capital cannot be insulated from the market

- There are many who remain wary of financial markets and their capacity to be irrational and volatile.
- Consequently, they try to generate hurdle rates that are unaffected by market movements, a futile and dangerous exercise, because we have to be price takers on at least some of the inputs into hurdle rates.
- Your cost of capital will change, and should change, as risk free rates and the prices of risk (equity risk premiums and default spreads) change.

Proposition 5: Gain perspective on cost of capital



Broad Group	1st Decile	1st Quartile	Median	3rd Quartile	9th Decile
Aus, NZ and Canada	6.11%	8.14%	9.59%	10.06%	10.45%
Developed Europe	6.07%	7.16%	9.01%	10.53%	12.01%
Emerging Markets	6.85%	8.27%	10.23%	12.24%	14.43%
Japan	6.47%	7.20%	8.87%	10.26%	11.31%
United States	5.25%	6.58%	8.84%	9.97%	10.86%
Global	6.23%	7.79%	9.53%	10.93%	13.23%