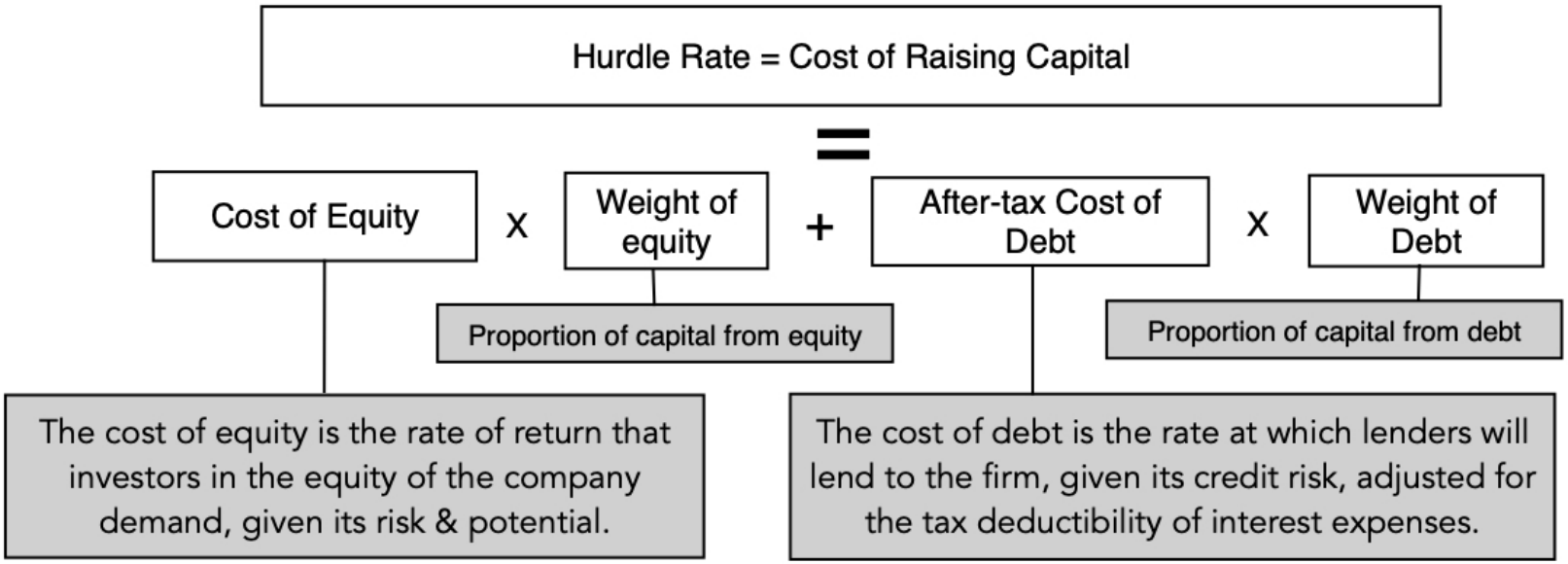
DATA UPDATE 4 FOR 2021: THE ELUSIVE HURDLE RATE

Connecting Price to Value

The Hurdle Rate

- There are multiple definitions floating around, from it is the cost of raising capital for that business to an opportunity cost, i.e., a return that you can make investing elsewhere, to a required return for investors in that business.
- In a sense, each of those definitions has an element of truth to it, but used loosely, each of them can also lead you to the wrong destination.
- In this session, I will start by looking at the role that hurdle rates play in running a business, with the consequences of setting them too high or too low, and then look at the fundamentals that should cause hurdle rates to vary across companies.

1. Hurdle Rate as Cost of Funding



2. Hurdle Rate as Opportunity Cost

Accounting Test
Return on invested capital (ROIC) > Cost of Capital

Time Weighted CF Test
NPV of the Project > 0

Time Weighted % Return
IRR > Cost of Capital

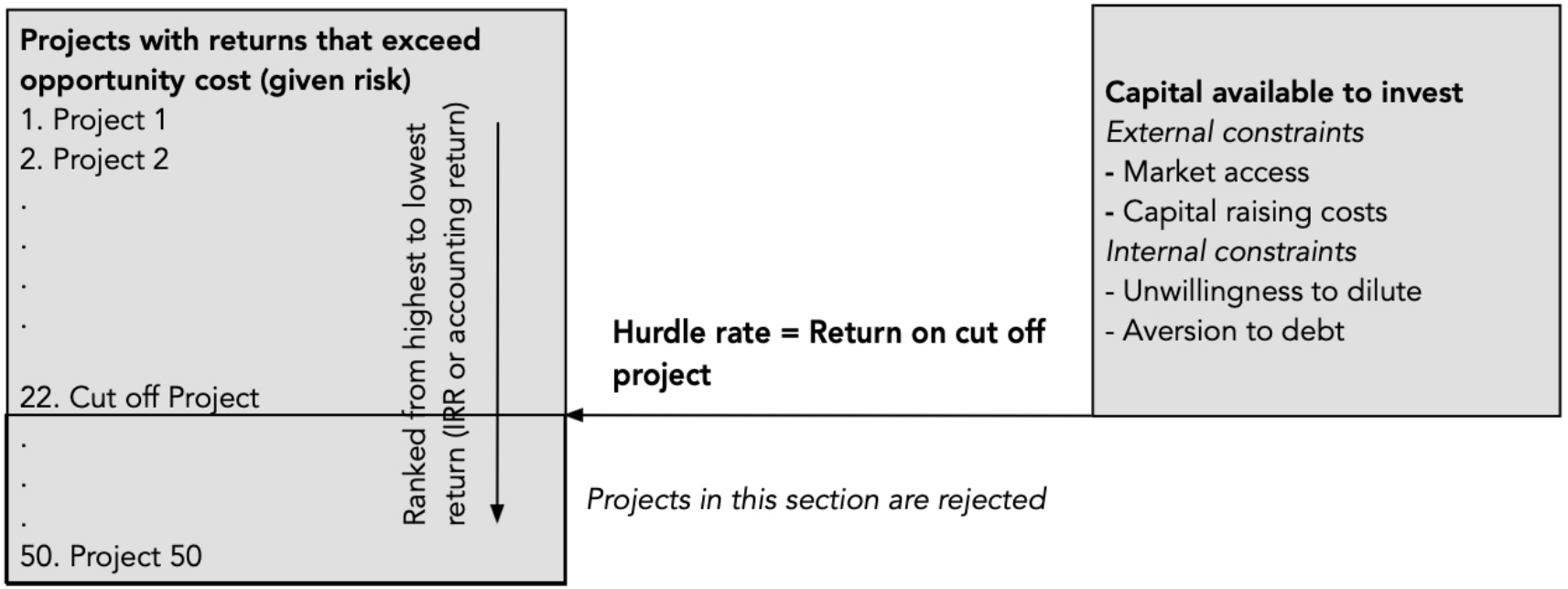
Hurdle Rate = Return you can make on investment of equivalent risk

Should reflect the risk of the investment, not the entity taking the investment.
Should use a debt ratio that is reflective of the investment's cash flows.

No risk subsidies
If you use the cost of capital of the company as your hurdle rate for all investments, risky investments (and businesses) will be subsidized by safe investments.(and businesses).

No debt subsidies
If you fund an investment disprportionately with debt, you are using the company's debt capacity to subsidize the investment.

3. Hurdle Rate as Clearer of Capital…



Fundamentals that determine hurdle rates

- The hurdle rate that you use on an investment should reflect:
  - The business that the investment is in, and its risk
  - The geography of the investment, both in terms of production and sales
  - The currency you choose to do your analysis in
  - The time at which you are doing the investment, since the market prices for risk vary across time
- It follows that companies should have dynamic hurdle rates that vary across time and across investment, not corporate hurdle rates frozen in time.

1. Business

- If you are a company with two business lines, one with predictable revenues and stable profit margins, and the other with cyclical revenues and volatile margins, you would expect to, other things remaining equal, use a lower hurdle rate for the first than the second.
- That said, there are two tricky components of business risk that you need to navigate:
  - Firm specific versus Macro risk: When you invest in a company, there are two types of risks that you are exposed to, risks that are specific to the company and risks that are macroeconomic and market-wide.
  - Financial leverage: Debt can lower the hurdle rate for some companies, but almost entirely because of the tax subsidy feature, not because it is cheaper. (More on that issue in a future data update post…) It can also raise the hurdle rate for others, because the distress risk it brings into the business overwhelms the tax advantage.

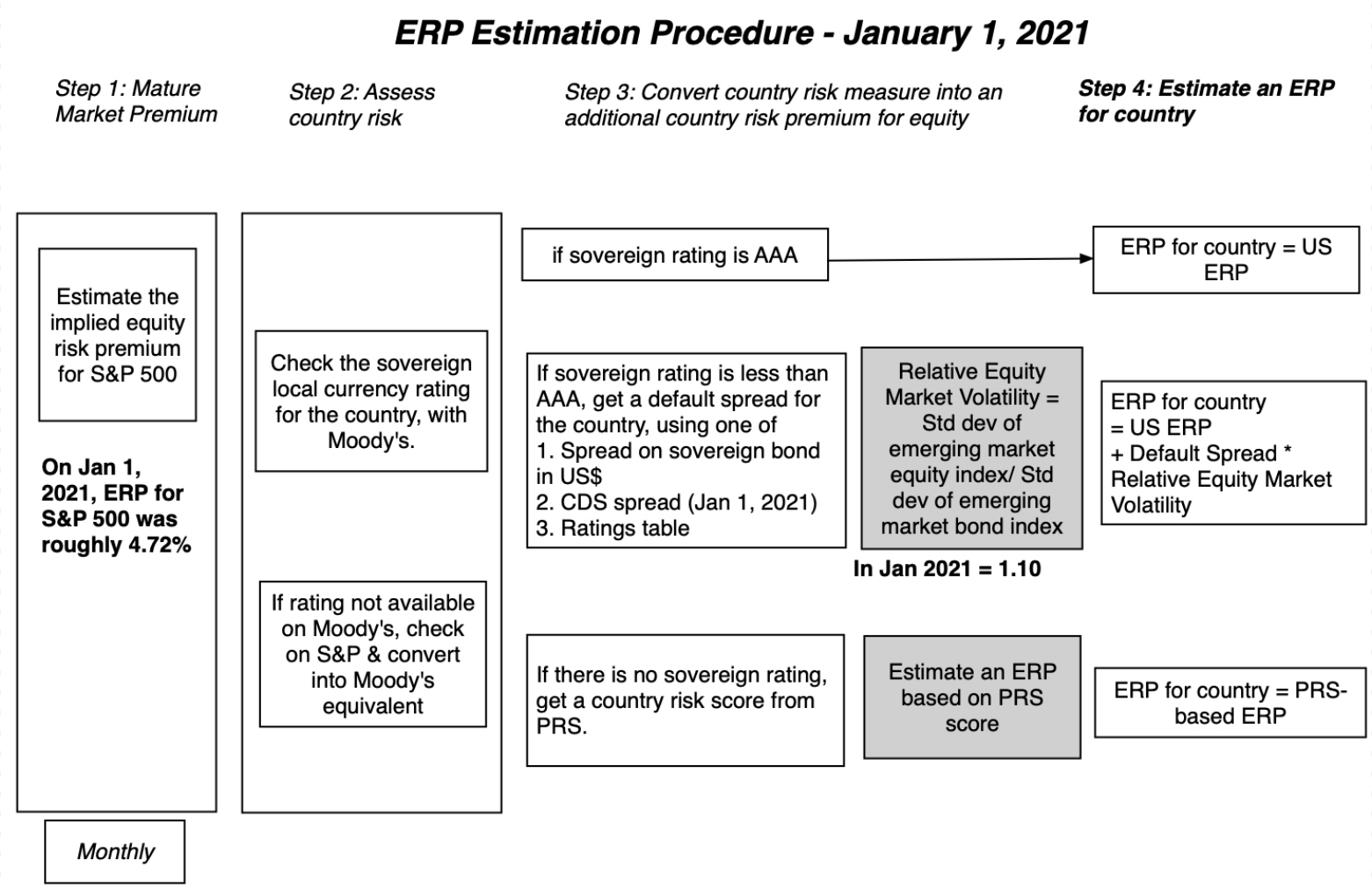
Costs of Capital in US $: Global Sectors

		Cost of Capital in US$: Percentiles				
Sub Group	*# firms*	*10th*	*25th*	*Median*	*75th*	*90th*
Communication Services	2,252	4.17%	5.46%	6.25%	6.57%	7.48%
Consumer Discretionary	6,228	5.13%	5.53%	6.36%	7.46%	8.78%
Consumer Staples	2,990	4.10%	4.60%	5.06%	6.03%	7.84%
Energy	1,753	5.13%	5.28%	5.39%	6.37%	8.24%
Financials	5,154	2.15%	3.39%	3.73%	4.59%	6.30%
Health Care	4,326	5.07%	5.31%	5.51%	5.97%	6.54%
Industrials	8,047	4.67%	5.19%	5.92%	6.66%	7.81%
Information Technology	5,963	5.93%	6.30%	6.81%	7.66%	8.66%
Materials	6,184	4.84%	5.02%	5.75%	6.48%	7.78%
Real Estate	2,725	3.61%	3.92%	4.31%	4.93%	5.85%
Utilities	936	3.44%	3.78%	4.42%	5.30%	6.55%

2. Geography

- As a business, should you demand a higher US $ hurdle rate for investing in a project in Nigeria than the US $ hurdle rate you would require for an otherwise similar project in Germany
- The answer, to me, seems obviously yes, though there are still some who argue otherwise. The vehicle that I use to convey this country risk into hurdle rates is the equity risk premium, the price of risk in equity markets, that I talked about in my earlier post on the topic. In that post, I computed the equity risk premium for the S&P 500 at the start of 2021 to be 4.72%, using a forward-looking, dynamic measure of the risk premium.
- But what if the company is looking at a project in Nigeria or Bangladesh? To answer that question, I estimate equity risk premiums for almost every country in the world, using a very simple (or simplistic) approach.

Estimation Process



ERP : Jan 2021

Andorra	Caa1	7.26%	11.98%	Italy	Baa3	2.13%	6.85%
Austria	Aa1	0.38%	5.10%	Jersey	Aaa	0.00%	4.72%
Belgium	Aa3	0.59%	5.31%	Liechtenstein	Aaa	0.00%	4.72%
Cyprus	Ba2	2.91%	7.63%	Luxembourg	Aaa	0.00%	4.72%
Denmark	Aaa	0.00%	4.72%	Malta	A2	0.82%	5.54%
Finland	Aa1	0.38%	5.10%	Netherlands	Aaa	0.00%	4.72%
France	Aa2	0.48%	5.20%	Norway	Aaa	0.00%	4.72%
Germany	Aaa	0.00%	4.72%	Portugal	Baa3	2.13%	6.85%
Greece	Ba3	3.49%	8.21%	Spain	Baa1	1.55%	6.27%
Guernsey	Aaa	0.00%	4.72%	Sweden	Aaa	0.00%	4.72%
Iceland	A2	0.82%	5.54%	Switzerland	Aaa	0.00%	4.72%
Ireland	A2	0.82%	5.54%	Turkey	B2	5.33%	10.05%
Isle of Man	Aa3	0.59%	5.31%	UK	Aa3	0.59%	5.31%
				Western Europe		**0.84%**	**5.56%**

Canada	Aaa	0.00%	4.72%
United States	Aaa	0.00%	4.72%
North America		**0.00%**	**4.72%**

Caribbean		**5.31%**	**10.03%**

Argentina	Ca	11.62%	16.34%
Belize	Caa3	9.68%	14.40%
Bolivia	B2	5.33%	10.05%
Brazil	Ba2	2.91%	7.63%
Chile	A1	0.68%	5.40%
Colombia	Baa2	1.84%	6.56%
Costa Rica	B2	5.33%	10.05%
Ecuador	Caa3	9.68%	14.40%
El Salvador	B3	6.30%	11.02%
Guatemala	Ba1	2.42%	7.14%
Honduras	B1	4.36%	9.08%
Mexico	Baa1	1.55%	6.27%
Nicaragua	B3	6.30%	11.02%
Panama	Baa1	1.55%	6.27%
Paraguay	Ba1	2.42%	7.14%
Peru	A3	1.16%	5.88%
Suriname	Caa3	9.68%	14.40%
Uruguay	B1	4.36%	9.08%
Venezuela	C	19.18%	23.90%
Latin America		**3.99%**	**8.71%**

Country	Rating	*CRP*	*ERP*
Angola	Caa1	7.26%	11.98%
Benin	B2	5.33%	10.05%
Botswana	A2	0.82%	5.54%
Burkina Faso	B2	5.33%	10.05%
Cameroon	B2	5.33%	10.05%
Cape Verde	B2	5.33%	10.05%
Congo (DR)	Caa1	7.26%	11.98%
Congo (Rep of)	Caa2	8.72%	13.44%
Côte d'Ivoire	Ba3	3.49%	8.21%
Egypt	B2	5.33%	10.05%
Ethiopia	B2	5.33%	10.05%
Gabon	Caa1	7.26%	11.98%
Ghana	B3	6.30%	11.02%
Kenya	B2	5.33%	10.05%
Mali	Caa1	7.26%	11.98%
Morocco	Ba1	2.42%	7.14%
Mozambique	Caa2	8.72%	13.44%
Namibia	Ba3	3.49%	8.21%
Niger	B3	6.30%	11.02%
Nigeria	B2	5.33%	10.05%
Rwanda	B2	5.33%	10.05%
Senegal	Ba3	3.49%	8.21%
South Africa	Ba2	2.91%	7.63%
Swaziland	B3	6.30%	11.02%
Tanzania	B2	5.33%	10.05%
Togo	B3	6.30%	11.02%
Tunisia	B2	5.33%	10.05%
Uganda	B2	5.33%	10.05%
Zambia	Ca	11.62%	16.34%
Africa		**4.94%**	**9.66%**

Albania	B1	4.36%	9.08%
Armenia	Ba3	3.49%	8.21%
Azerbaijan	Ba2	2.91%	7.63%
Belarus	B3	6.30%	11.02%
Bosnia & Herzegovina	B3	6.30%	11.02%
Bulgaria	Baa1	1.55%	6.27%
Croatia	Ba1	2.42%	7.14%
Czech Republic	Aa3	0.59%	5.31%
Estonia	A1	0.68%	5.40%
Georgia	Ba2	2.91%	7.63%
Hungary	Baa3	2.13%	6.85%
Kazakhstan	Baa3	2.13%	6.85%
Kyrgyzstan	B2	5.33%	10.05%
Latvia	A3	1.16%	5.88%
Lithuania	A3	1.16%	5.88%
Macedonia	Ba3	3.49%	8.21%
Moldova	B3	6.30%	11.02%
Montenegro	B1	4.36%	9.08%
Poland	A2	0.82%	5.54%
Romania	Baa3	2.13%	6.85%
Russia	Baa3	2.13%	6.85%
Serbia	Ba3	3.49%	8.21%
Slovakia	A2	0.82%	5.54%
Slovenia	A3	1.16%	5.88%
Tajikistan	B3	6.30%	11.02%
Ukraine	B3	6.30%	11.02%
Uzbekistan	Baa2	1.84%	6.56%
E. Europe & Russia		**2.08%**	**6.80%**

Abu Dhabi	Aa2	0.48%	5.20%
Bahrain	B2	5.33%	10.05%
Iraq	Caa1	7.26%	11.98%
Israel	A1	0.68%	5.40%
Jordan	B1	4.36%	9.08%
Kuwait	A1	0.68%	5.40%
Lebanon	C	19.18%	23.90%
Oman	Ba3	3.49%	8.21%
Qatar	Aa3	0.59%	5.31%
Ras Al Khaima	Aaa	0.00%	4.72%
Saudi Arabia	A1	0.68%	5.40%
Sharjah	Baa2	1.84%	6.56%
United Arab Emirates	Aa2	0.48%	5.20%
Middle East		**1.53%**	**6.25%**

Country	*PRS*	*CRP*	*ERP*
Algeria	57.25	8.72%	13.44%
Brunei	80	0.82%	5.54%
Gambia	63.75	6.30%	11.02%
Guinea	53.5	11.62%	16.34%
Guinea-Bissau	62	7.26%	11.98%
Guyana	65.75	5.33%	10.05%
Haiti	52.75	11.62%	16.34%
Iran	59.25	8.72%	13.44%
Korea, D.P.R.	50.75	11.62%	16.34%
Liberia	53.5	11.62%	16.34%
Libya	58.25	8.72%	13.44%
Madagascar	63.25	6.30%	11.02%
Malawi	58.75	8.72%	13.44%
Myanmar	63.75	6.30%	11.02%
Sierra Leone	58.75	8.72%	13.44%
Somalia	50.5	11.62%	16.34%
Sudan	38.25	19.18%	23.90%
Syria	47	19.18%	23.90%
Yemen, Republic	50	19.18%	23.90%
Zimbabwe	52.25	11.62%	16.34%

Bangladesh	Ba3	3.49%	8.21%
Cambodia	B2	5.33%	10.05%
China	A1	0.68%	5.40%
Fiji	Ba3	3.49%	8.21%
Hong Kong	Aa3	0.59%	5.31%
India	Baa3	2.13%	6.85%
Indonesia	Baa2	1.84%	6.56%
Japan	A1	0.68%	5.40%
Korea	Aa2	0.48%	5.20%
Laos	Caa2	8.72%	13.44%
Macao	Aa3	0.59%	5.31%
Malaysia	A3	1.16%	5.88%
Maldives	B3	6.30%	11.02%
Mauritius	Baa1	1.55%	6.27%
Mongolia	B3	6.30%	11.02%
Pakistan	B3	6.30%	11.02%
Papua New Guinea	B2	5.33%	10.05%
Philippines	Baa2	1.84%	6.56%
Singapore	Aaa	0.00%	4.72%
Solomon Islands	B3	6.30%	11.02%
Sri Lanka	Caa1	7.26%	11.98%
Taiwan	Aa3	0.59%	5.31%
Thailand	Baa1	1.55%	6.27%
Vietnam	Ba3	3.49%	8.21%

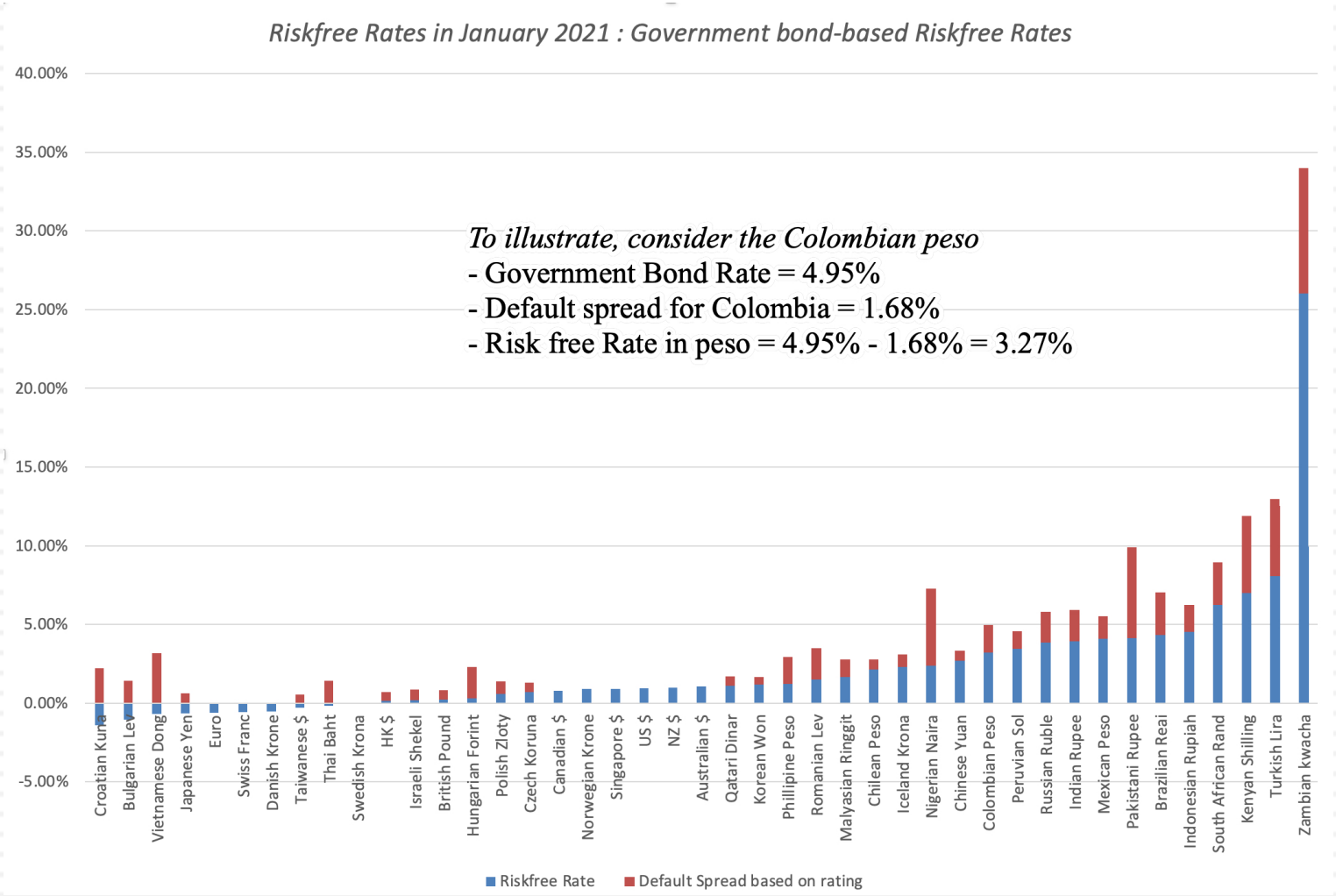
Australia	Aaa	0.00%	4.72%
Cook Islands	B1	4.36%	9.08%
New Zealand	Aaa	0.00%	4.72%
Australia & NZ		**0.00%**	**4.72%**

Blue: Moody's Rating
Red: Added Country Risk
Green #: Total ERP

3. Currency

- Currencies are a scaling variable and dealing with them is simple if you remember two truths. The primary reason why hurdle rates vary across currencies is because they bring different inflation expectations into the process, with higher inflation currencies commanding higher hurdle rates.
- To illustrate, if you assume that inflation in the US $ is 1% and that inflation in the Nigerian Naira is 8%, the hurdle rate that we computed for the Nigerian project in the last section can be calculated as follows:
  - Cost of equity in Naira for Nigerian project (short cut) = 12.06% + (8% - 1%) = 19.06%
  - Cost of equity in Naira for Nigerian project (precise) = 1.1206 * (1.08/1.01) -1 = 19.83%
- In effect, the Nigerian Naira hurdle rate will be higher by 7% (7.77%) roughly (precisely) and that difference is entirely attributable to inflation differentials.

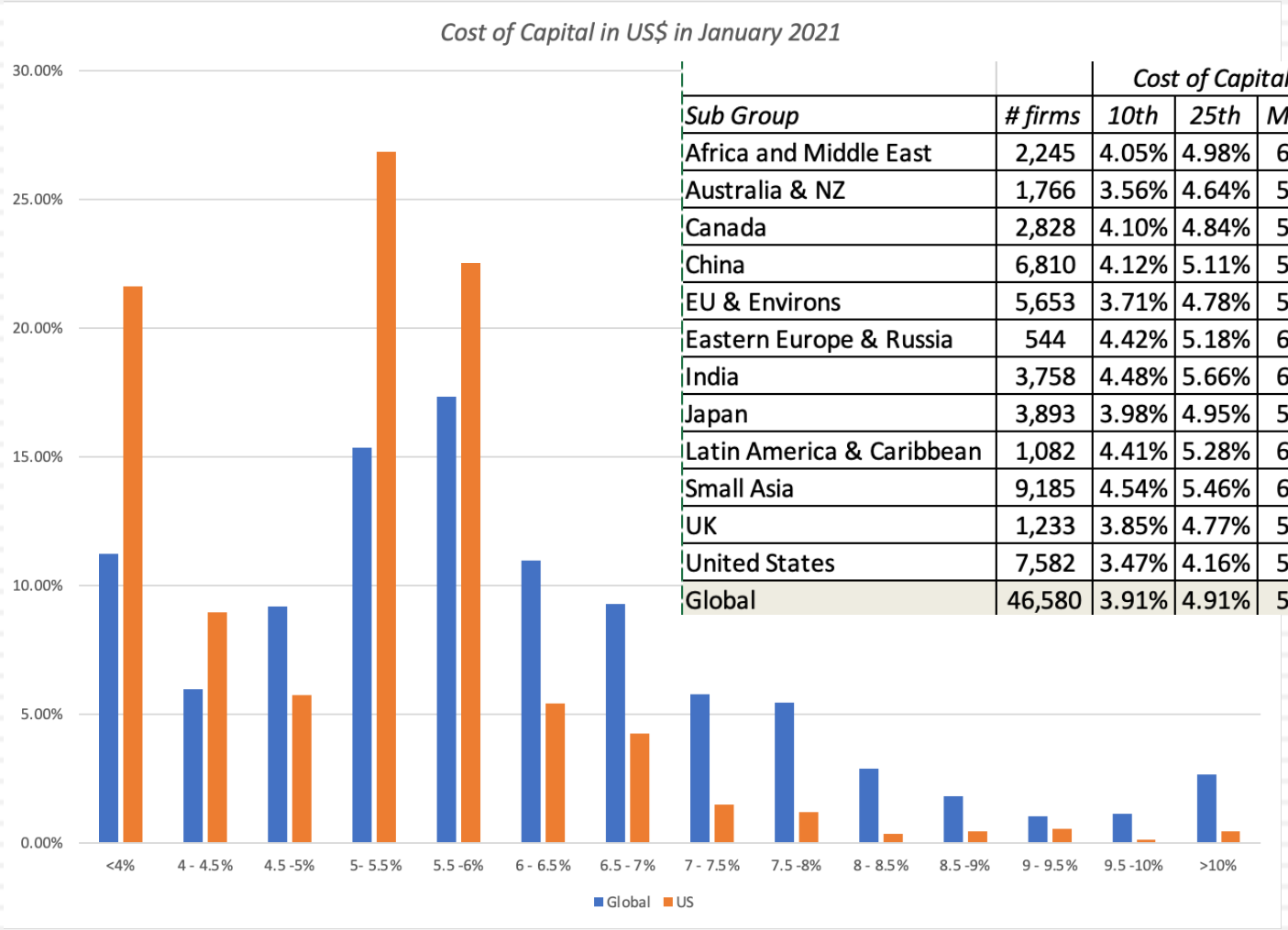
Risk free Rates in Currencies



Implication 1: Nail down currency

- We all have our frames of reference, based upon where we work, and not surprisingly, when we talk with others, we expect them to share the same frames of reference.
  - When it comes to hurdle rates, that can be dangerous, since hurdle rates will vary across currencies, and cross-currency comparisons are useless.
  - Thus, a 6% hurdle rate in Euros may look lower than a 12% hurdle rate in Turkish lira, but after inflation is considered, the latter may be the lower value.
  - Any talk of a global risk free rate is nonsensical, since risk free rates go with currencies, and currencies matter only because they convey inflation. That is why you always have the option of completely removing inflation from your analysis, and do it in real terms.

Implication 2: We live in a low hurdle rate world…



		Cost of Capital in US$: Percentiles				
Sub Group	*# firms*	*10th*	*25th*	*Median*	*75th*	*90th*
Africa and Middle East	2,245	4.05%	4.98%	6.27%	8.01%	10.14%
Australia & NZ	1,766	3.56%	4.64%	5.00%	5.33%	5.93%
Canada	2,828	4.10%	4.84%	5.02%	5.35%	5.98%
China	6,810	4.12%	5.11%	5.95%	6.64%	7.60%
EU & Environs	5,653	3.71%	4.78%	5.68%	6.72%	8.28%
Eastern Europe & Russia	544	4.42%	5.18%	6.44%	7.67%	8.71%
India	3,758	4.48%	5.66%	6.97%	7.69%	8.25%
Japan	3,893	3.98%	4.95%	5.83%	6.44%	7.03%
Latin America & Caribbean	1,082	4.41%	5.28%	6.66%	8.29%	10.92%
Small Asia	9,185	4.54%	5.46%	6.34%	7.51%	8.94%
UK	1,233	3.85%	4.77%	5.87%	6.37%	6.81%
United States	7,582	3.47%	4.16%	5.30%	5.73%	6.32%
Global	46,580	3.91%	4.91%	5.78%	6.73%	7.90%

Implication 3: Don’t sweat the small stuff…

- I spend a lot of my time talking about and doing intrinsic valuations, and for those of you who use discounted cash flow valuations to arrive at intrinsic value, it is true that discount rates are an integral part of a DCF.
- That said, I would argue that we spend way too much time on discount rates, finessing risk measures and risk premiums, and too little time on cash flows.
- In fact, if you are in a hurry to value a company in US dollars, just use a cost of capital based upon the distribution in the graph above (4.16% for a safe company, 5.30% for an average risk company or 5.73% for a risky company) as your discount rate, spend your time estimating revenue growth, margins and reinvestment, and if you do have the time, come back and tweak the discount rate.
- And as for those sensitivity analysis that claim to show that value is very sensitive to the discount rate, that happens only if you change the discount rate and leave everything else alone, which is valuation malpractice.