Aswath Damodaran

THE PRICE OF RISK: WITH EQUITY RISK PREMIUMS, CAVEAT EMPTOR!

Here an ERP, there an ERP….

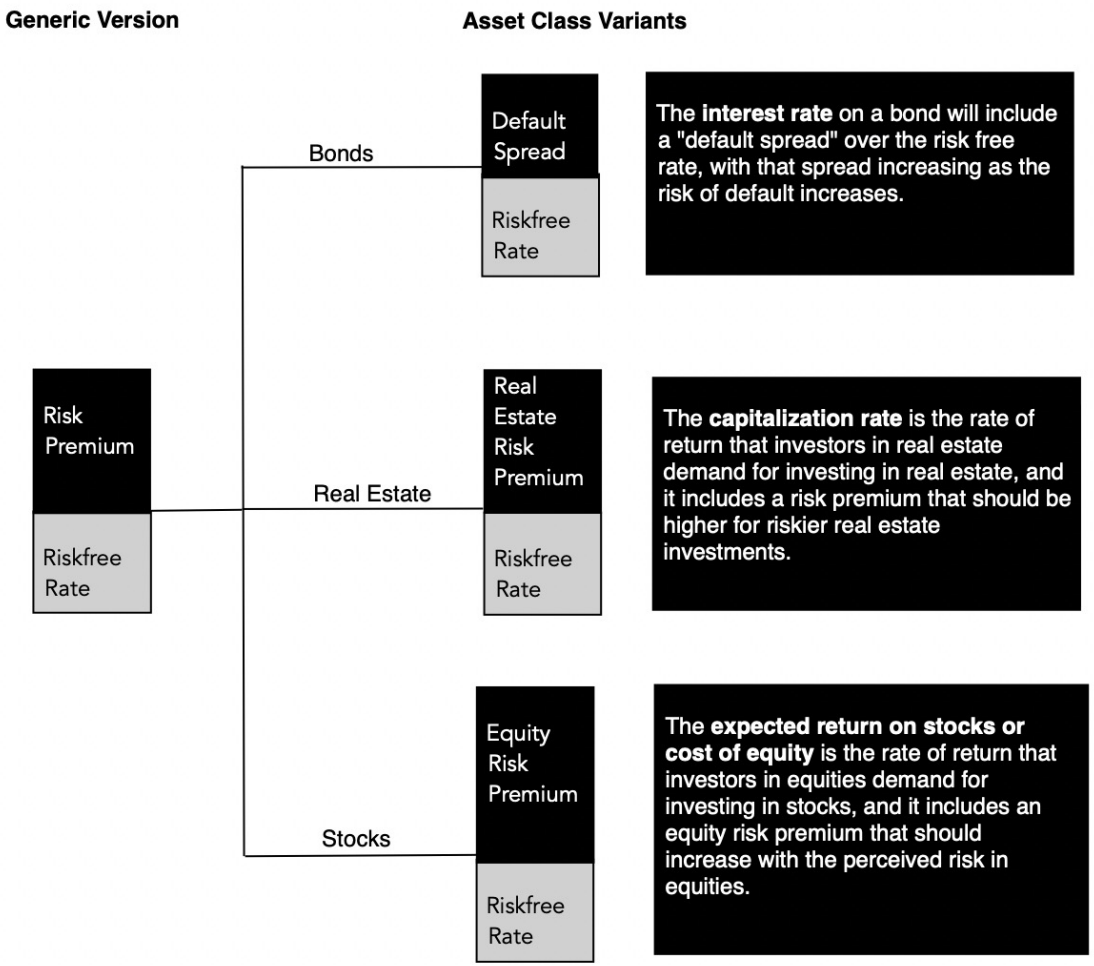
ERP: An Obsession

- If you have been reading my posts for a while, you know that I have an obsession with equity risk premiums, which I believe lie at the center of almost every debate in markets and investing.
- As part of that obsession, at the start of every month, since September 2008, I have estimated an equity risk premium for the S&P 500 and not only used that premium, when valuing companies during that month, but shared my estimate on my webpage and on social media.
- In my last session, on country risk premiums, I used the equity risk premium of 5.00% that I estimated for the US at the start of July 2023, for the S&P 500.

But confusion abounds…

- An article in MarketWatch earlier this year referred to the equity risk premium as an esoteric concept, a phrasing that suggested that it had little relevance to the average investor.
- Adding to the confusion are the proliferation of very different numbers that you may have seen attached to the current equity risk premium, each usually quoting an expert in the field, but providing little context.
- Just in last few weeks, I have seen
  - a Wall Street Journal article put the equity risk premium at 1.1%
  - a Reuters report put it at 2.2%
  - A bearish (and widely followed) money manager estimate the equity risk premium to be negative

ERP: What is it?



ERP: What drives it?

Risk Aversion

Thesis: As investors become more (less) risk averse, equity risk premiums should rise (fall).
Implication: Markets with aging investors should have higher risk premiums that markets with younger investors.

Economic Uncertainty

Thesis: As uncertainty about the economy increases (decreases), equity risk premiums should increase (decrease).
Implication: Equity risk premiums should rise during economic crises, and be higher in younger & growing economies.

Inflation and Interest Rates

Thesis: As inflation rises (falls), uncertainty about inflation will increase (decrease), pushing up (down) equity risk premiums.
Implication: Equity risk premiums should rise during periods of high and volatile infation.

Information

Thesis: As corporate disclosures becomes more (less) informative , equity risk premiums should fall (rise).
Implication: Markets with better disclosure rules and requitements should have lower equity risk premiums that markets without.

Equity Risk Premium

Liquidity and Fund Flows

Thesis: As liquiity increases and funds flow into equity markets, equity risk premiums should decrease.
Implication: Events or actions (crises, regulation) that stymie fund flows and liquidity will increase equity risk premiums

Catastrophic Risk

Thesis: As the likelihood of catastrophic events (low probability events with large consequences) increases, equity risk premiums should rise.
Implication: As investor worries about large consequence events (pandemics, nuclear war) increases, equity risk premiums will go up.

Government Policy

Thesis: Governments that are more capricious, with changing economic rules/policies, will give rise to higher equity risk premiums.
Implication: Equity risk premiums should be higher in countries/markets where there is less continuity in economic policy and regulation.

Central Banks & Monetary Policy

Thesis: Central banks that are less predictable in policy responses and more inconsistent in their actions will push up equity risk premiums.
Implication: As monetary policy becomes more unpredictable, for political reasons or because of inflation, equity risk premiums will rise.

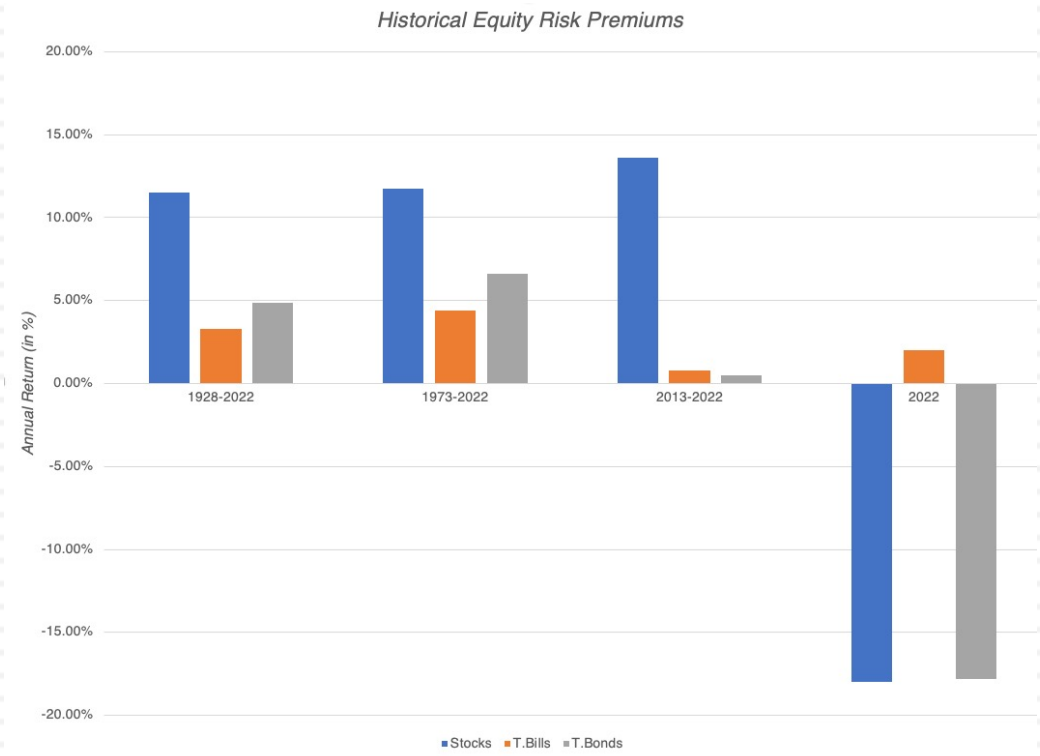
ERP: Why should you care?

1. Market Timing: Any statement about market pricing can be rephrased as a statement about equity risk premiums; if you believe that the equity risk premium, as priced in by the market, has become too low (relative to what you believe is justified, given history and fundamentals), you are arguing that stocks are overpriced (and due for a correction). Conversely, if you believe that the equity risk premium has become too high, you are contending that stocks are cheap, in the aggregate.
2. Stock Picker: When you invest in an individual stock, you are doing so because you believe that stock is trading at a price, below your estimate of its value. However, to make this judgment, you have to assess value in the first place, and while we can debate growth potential and profitability, the equity risk premium becomes an input into the process, determining what you should earn as an expected return on a stock. Put simply, if you are using an equity risk premium in your company valuation that is much lower (higher) than the equity risk premium, priced in by the market, you are biasing yourself to find the company to be under (over) valued.
3. Corporate Finance: The role of the equity risk premium in determining the expected return on a stock makes it a key input in corporate finance, as well, because that expected return becomes the company's cost of equity. That cost of equity is then embedded in a cost of capital, and as equity risk premiums rise, all companies will see their costs of capital rise.

ERP: Measurement

- If the equity risk premium is a market-set number for the price of risk in equity markets, how do we go about estimating it?
- Unlike the bond market, where interest rates on bonds can be used to back out default spreads, equity investors are not explicit about what they are demanding as expected returns when they buy stocks.
- A range of approaches have been used to estimate the equity risk premium:
  - Historical Risk Premium: Use the premium that investors in stocks have earned over history, relative to risk free investment.
  - Historical Returns based Forecasts: Using just historical returns or historical returns combined with a measure of stock cheapness to forecast expected returns on stocks.
  - Earnings Yield (Earnings to Price Ratio): The earnings yield is often used a ”short cut” to estimating the expected return on stocks.
  - Implied ERP: Go the distance with fundamentals and back out an internal rate of return on stocks, given pricing and expected cash flows.

1. Historical ERP



	Arithmetic Average		Geometric Average	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
1928-2022	8.19%	6.64%	6.36%	5.06%
Std Error	*2.05%*	*2.15%*		
1973-2022	7.33%	5.14%	5.90%	4.12%
Std Error	*2.50%*	*2.75%*		
2013-2022	12.81%	13.08%	11.66%	12.32%
Std Error	*5.31%*	*4.81%*		
2022	-20.03%	-0.18%	-20.03%	-0.18%
Std Error	*NA*	*NA*		

Why it remains the default approach…

- Stability and Precision: The fact that you can compute averages precisely gets translated into the delusion that these averages are facts, when, in fact, they are not just estimates but very noisy ones. For instance, even if you use the entire 94-year time period (from 1928-2022), your estimate for the equity risk premium is that it falls somewhere from 2.34% - 10.94% (Arithmetic average plus/minus two standard errors),
- Bias: It is also true that the menu of choices that you have for historical equity risk premiums, from a low of 4.12% to a high of 13.08%, gives analysts a chance to let their biases play out. After all, if your job is to come up with a low value, all you have to do is latch on to a high number in this table, claim that it is a historical risk premium and deliver on your promise.

Limits of Historical ERP

- Mean Reversion: When using historical equity risk premiums, you are assuming mean reversion, i.e., that returns revert to historic norms over time, though, as you can see, those norms can be different, using different time periods.
- Structural Stability: You are also assuming that the economic and market structure has not changed significantly over the estimation period, i.e., that the fundamentals that determine the risk premium have remained stable.
  - For much of the twentieth century, historical equity risk premiums worked well as risk premium predictors in the United States, precisely because these assumptions held up.
  - With China's rise, increased globalization and the crisis of 2008 as precipitating factors, I would argue that the case for using historical risk premiums has become much weaker.

2. Historical Returns-based Forecasts

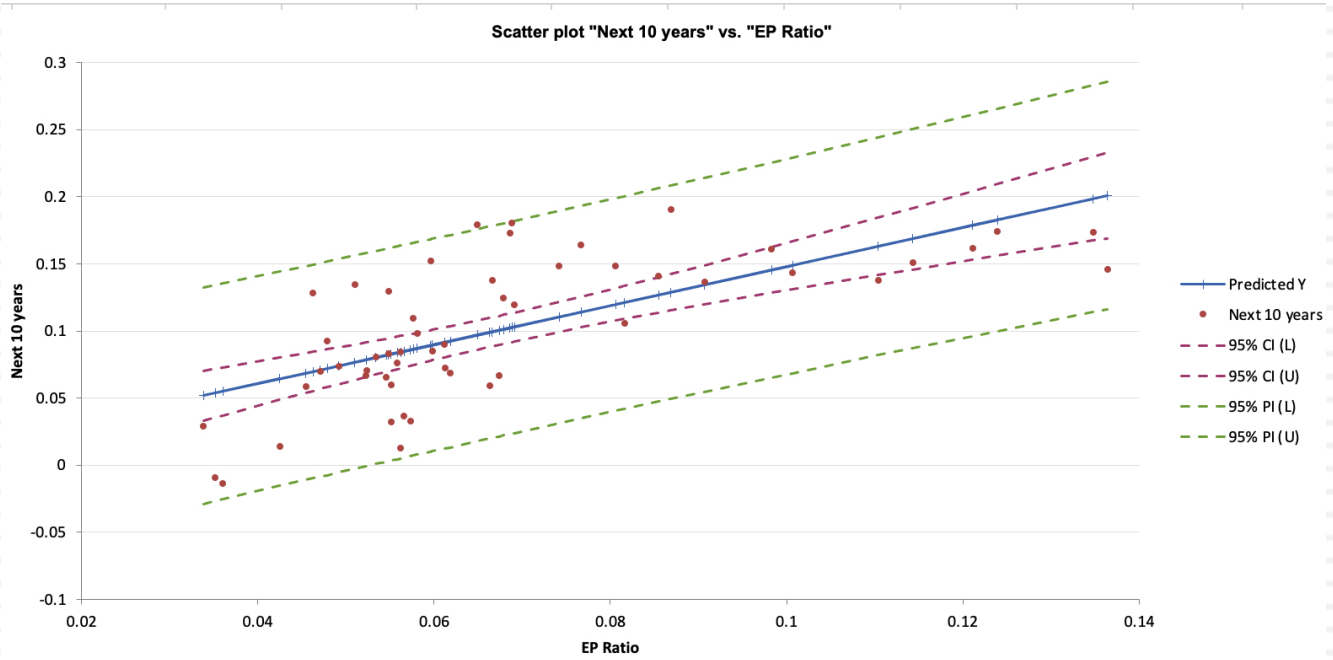
Correlations of Stock Returns over time; 1928 to 2022

This year's return correlated with…	*Correlations*
Next year's return	**-0.0157**
t	-0.1504
p-value (2-tailed)	0.8808
N	94
Compounded Annual Returns in next 5 years	**-0.1503**
t	-1.4265
p-value (2-tailed)	0.1573
N	90
Compounded Annual Returns in next 10 years	0.0241
t	0.2196
p-value (2-tailed)	0.8267
N	85

If stock returns are uncorrelated over time, i.e., this year's annual return tells you nothing about what will happen in the next year, the next 5 years or the next 10 years, you should expect to see zero correlation. A positive correlation would indicate that good year(s) follow good years (momentum), whereas a negative correlation would indicate teh opposite (reversal)

Bottom line: Across the entire time period, there is little evidence of correlation in market returns over time.

EP plus Stock Returns



Next 10 years = 0.00254 + 1.4543 * EP Ratio

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1	0.06715	0.06715	44.07158	2.02623E-8
Residual	51	0.0777	0.00152		
Total	52	0.14485			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	0.00254	0.01591	-0.0294	0.03448	0.15967	0.87377	*Accepted*			
EP Ratio	1.4543	0.21907	1.01451	1.89409	6.63864	2.02623E-8	*Rejected*	1	1	0.68085
T (5%)	2.00758									

LCL - Lower limit of the 95% confidence interval

UCL - Upper limit of the 95% confidence interval

Using (and misusing) the regression

- You can use the regression, in conjunction with the EP ratio today (4%), to get predictions:
  - Expected Return = .00254 + 1.4543 (.04) = .0607 or 6.07%
  - ERP = 6.07% - 3.97% = 2.10%
- It is worth remembering that the expected return predictions come with error, and the more appropriate use of this regression is to get a range for the expected annual return of 4-8%.
- Extending the regression back to 1928 increases the R-squared and results in regressions that yield predicted stock returns that can be lower than the treasury-bond rate, i.e., a negative equity risk premium.

EP-based Returns: Limits

- Data costs: With the longer time-period predictions, where the predictive power is strongest, the same data is counted multiple times in the same regression. In addition, the longer your time horizon, the more data you lose. With a 10-year time horizon, for instance, the last year that you can use for predictions is 2012, since the EP ratio in that year, will be matched up to the returns from 2013-2022.
- Structural instability: You are assuming that the structural model is stable and that there will be mean reversion. In fact, within this time period (1928 - 2022), the predictive power is far greater from 1928 to 1960 than it is from 1961 to 2022.
- You cannot trade R-squared: While these models tout high R-squared, the number that matters is the standard error of the predictions; predicting that your annual return will be 5% for the next decade with a standard error of 2% yields a range that leaves you, as an investor, in suspended animation. Bluntly put, building a model that explains past returns well does not equate to being able to make money on predictions of returns, and trying to time markets, from this model.

3. The Fed Model: EP and Cost of Equity

- To the extent that value is driven by expected future cash flows, you can back out an equity risk premium from current stock prices. In the simplest version of this model:

$$\text{Value of Equity} = \frac{\textit{Expected Dividends next year}}{(\textit{Cost of Equity} - g)} = \frac{\textit{Expected Earnings (Payout Ratio)}}{(\textit{Cost of Equity} - g)}$$

- If you assume no growth and that all earnings are paid out as dividends:

$$\text{Value of Equity} = \frac{\textit{Expected Earnings}}{\textit{Cost of Equity}}$$

$$\text{Cost of Equity} = \frac{\textit{Expected Earnings}}{\textit{Value of Equity}} = \textit{EP Ratio}$$

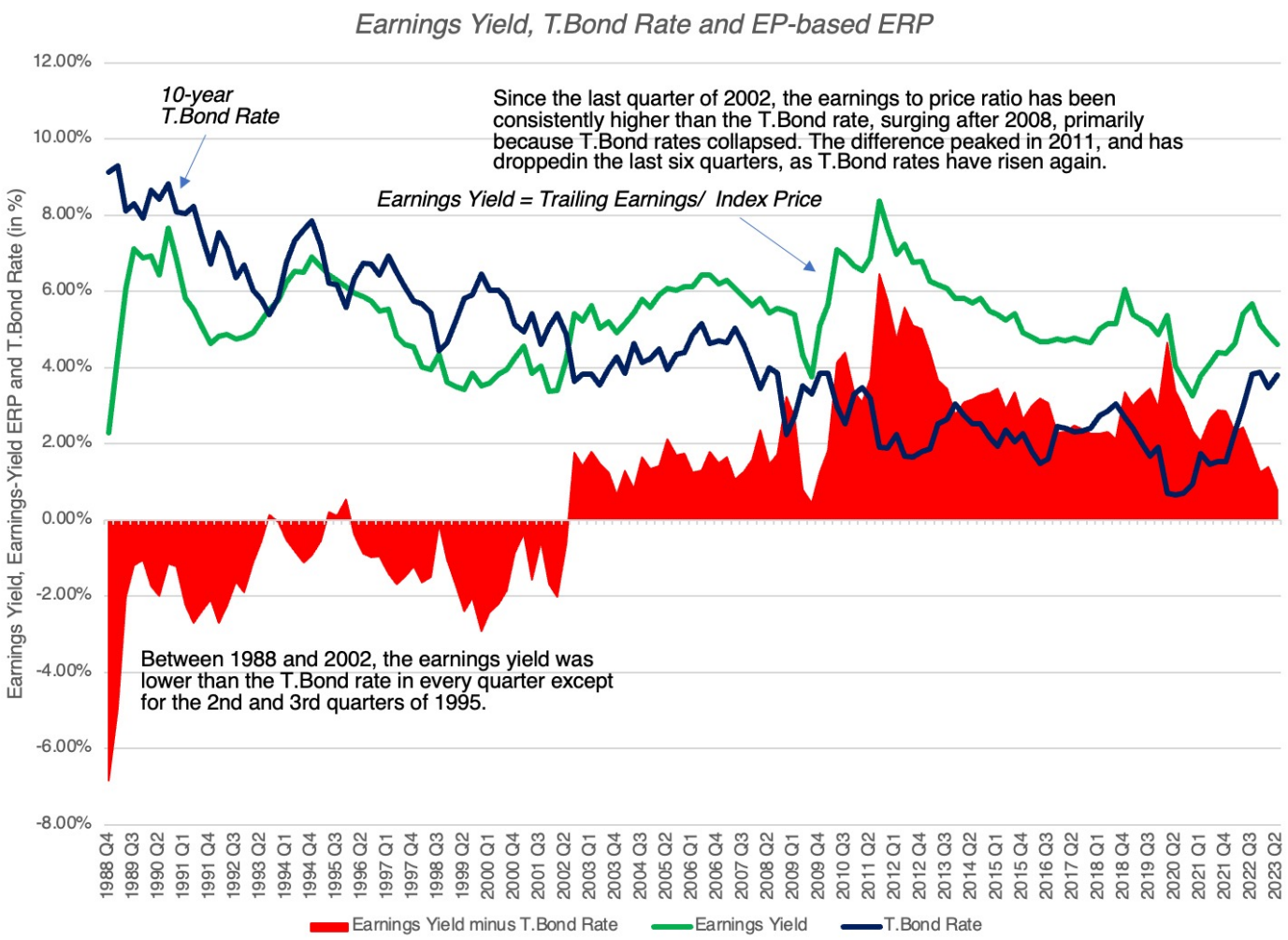
- If you assume firms make no excess returns:

$$\text{Value of Equity} = \frac{\textit{Expected Earnings}\ (1 - \frac{g}{ROE})}{(\textit{Cost of Equity} - g)} = \frac{\textit{Expected Earnings}\ (1 - \frac{g}{\textit{Cost of Equity}})}{(\textit{Cost of Equity} - g)}$$

$$\frac{(\textit{Cost of Equity} - g)}{(1 - \frac{g}{\textit{Cost of Equity}})} = \frac{\textit{Expected Earnings}}{\textit{Value of Equity}}$$

$$\text{Cost of Equity} = \frac{\textit{Expected Earnings}}{\textit{Value of Equity}} = \textit{EP Ratio}$$

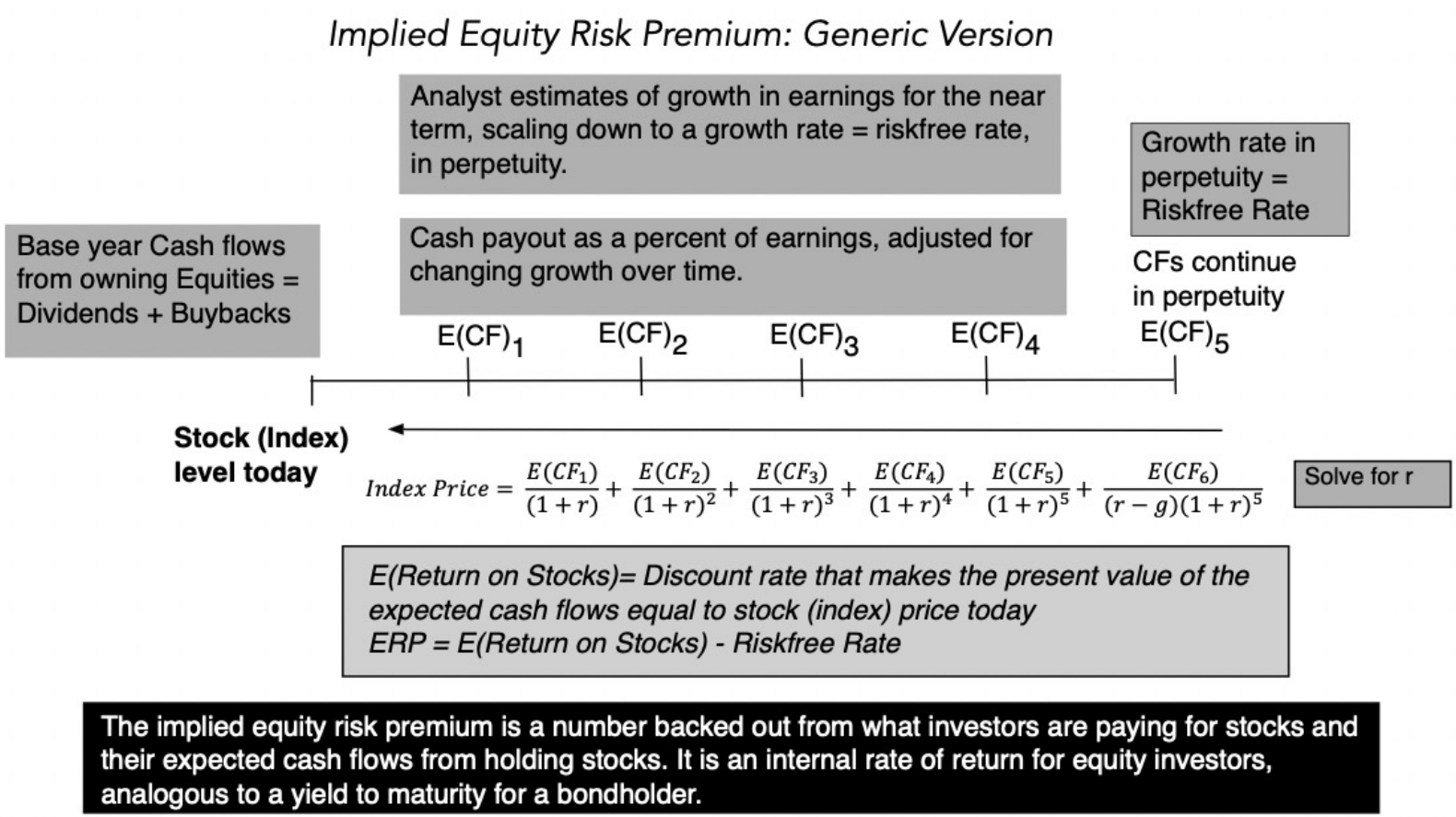
The EP-based ERP



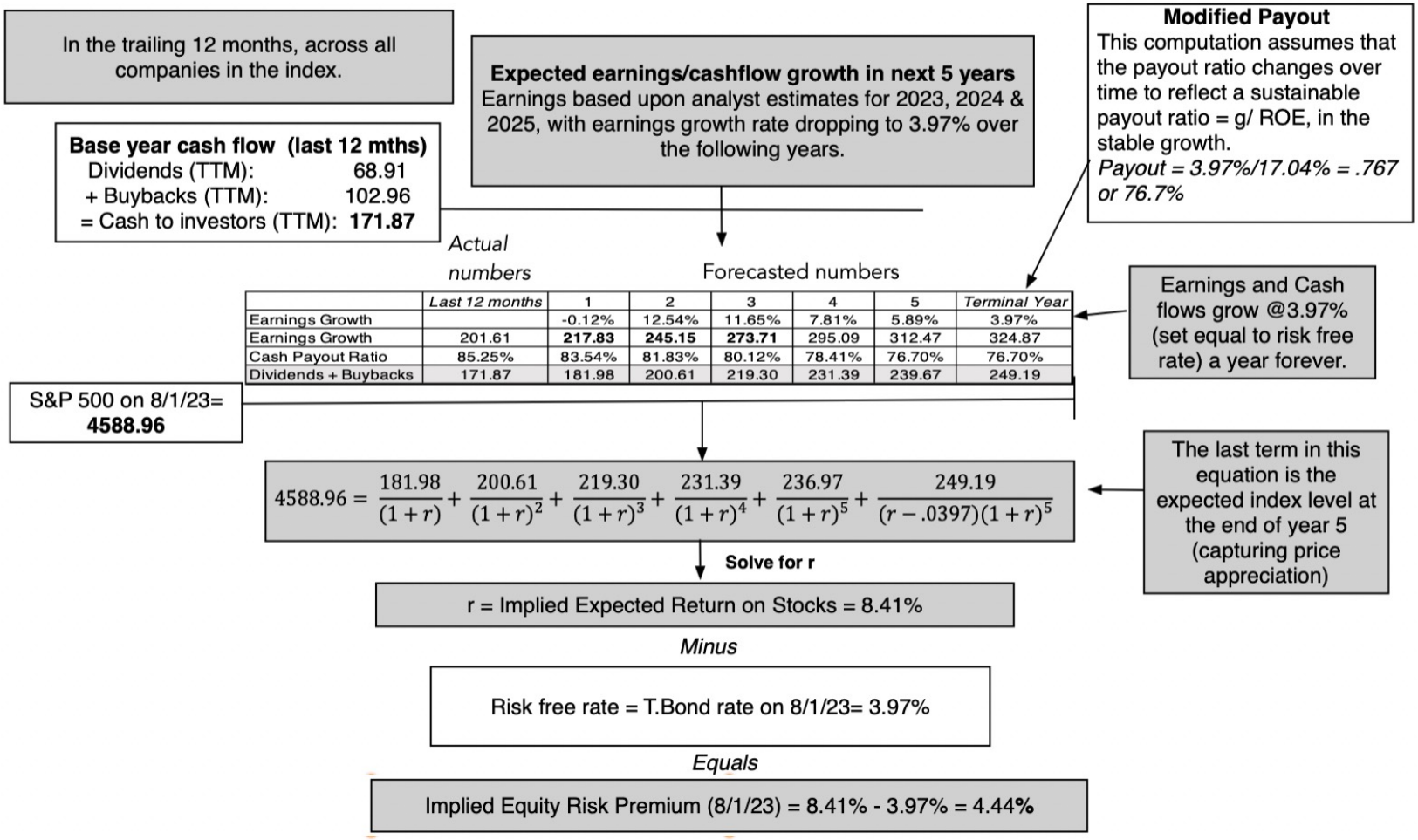
The EP-based ERP: Limits

- My problem with the earnings yield approach to estimating equity risk premiums is that the assumptions that you need to make to justify its use are are at war with the data.
  - First, while earnings growth for US stocks has been negative in some years, it has been positive every decade for the last century, and there are no analysts (that I am aware of) expecting it be zero (in nominal terms) in the future.
  - Second, assuming that the return on equity is equal to the cost of equity may be easy on paper, but the actual return on equity for companies in the S&P 500 was 19.73% in 2022, 17.04% over the last decade and has been higher than the cost of equity even in the worst year in this century (9.35% in 2008).
- *If you allow for growth in earnings and excess returns, it is clear that while the earnings yield will yield too low a value for the ERP, because of these omissions, and will yield negative values in many periods, making it useless as an ERP estimator for valuation.*

4. Implied ERP



On August 1, 2023

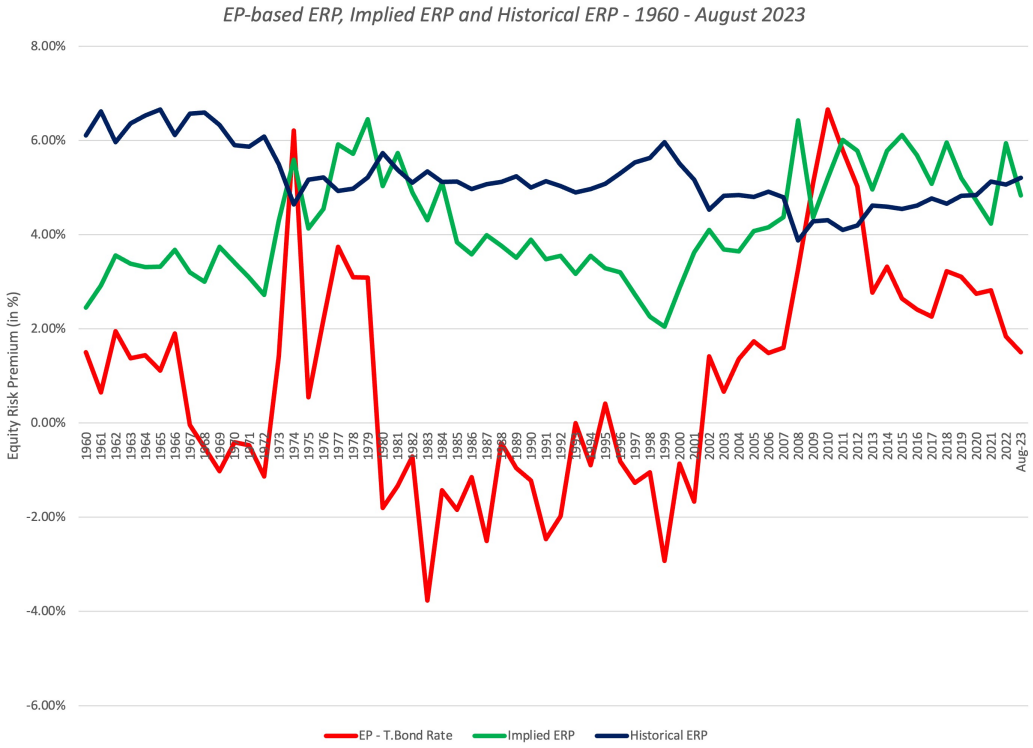


	Last 12 months	1	2	3	4	5	Terminal Year
Earnings Growth		-0.12%	12.54%	11.65%	7.81%	5.89%	3.97%
Earnings Growth	201.61	**217.83**	**245.15**	**273.71**	295.09	312.47	324.87
Cash Payout Ratio	85.25%	83.54%	81.83%	80.12%	78.41%	76.70%	76.70%
Dividends + Buybacks	171.87	181.98	200.61	219.30	231.39	239.67	249.19

Implied ERP versus EP-based ERP

- To reconcile my estimate of the equity risk premium with the earnings yield approach, set the earnings growth rate to zero and the cash payout to 100%, and you will find that the equity risk premium you get converges on the 0.41% that you get with the earnings yield approach.
- Adding growth and excess returns to the equation is what brings it up to 4.44%, and I believe that the data is on my side, in this argument.
- To the critique that my approach requires estimates of earnings growth and excess returns that may be wrong, I am willing to wager that whatever mistakes I make on either input will be smaller than the input mistakes made by assuming no growth and no excess returns, as is the case with the earnings yield approach.

Picking an Approach for estimating ERP



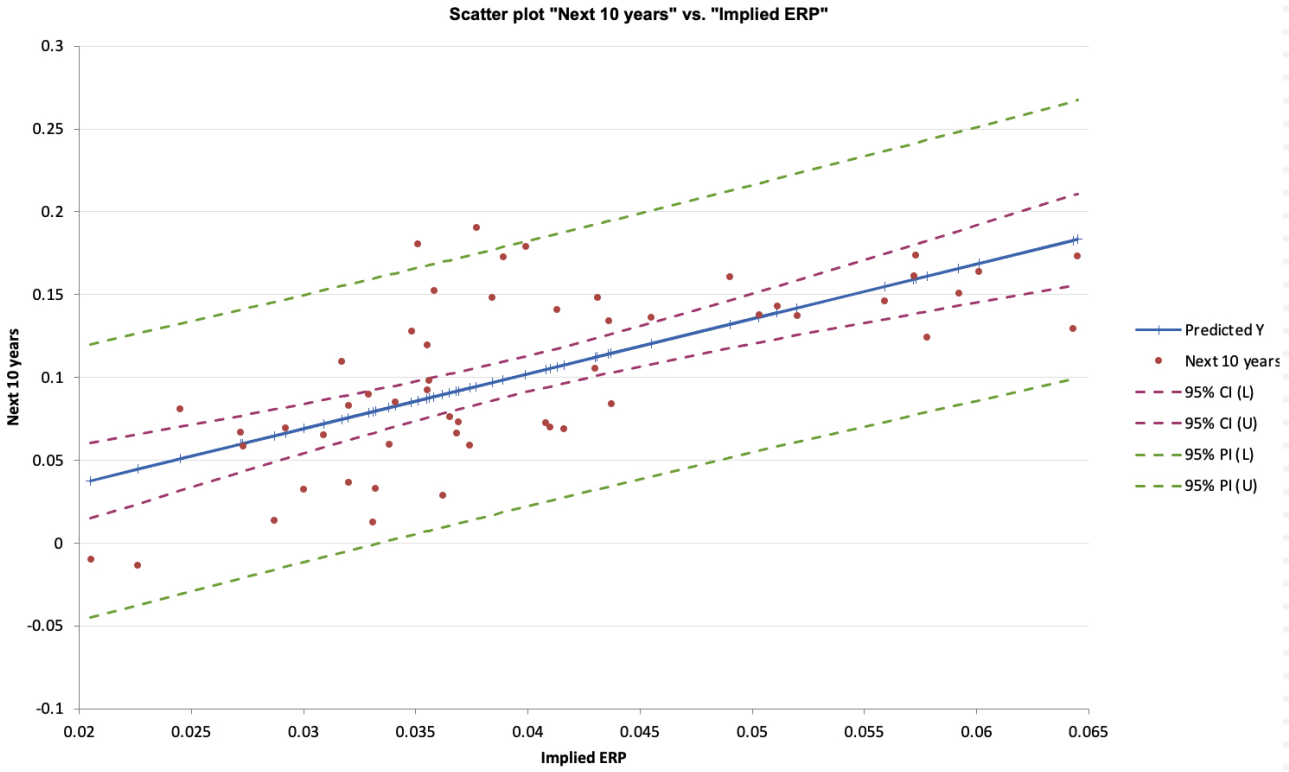
Correlations across ERP Measures

ERP Measure	EP - T.Bond Rate	Implied ERP	Historical ERP
EP - T.Bond Rate	1.0000		
t			
Implied ERP	**0.6085**	1.0000	
t	6.0385		
Historical ERP	**-0.4686**	**-0.6483**	1.0000
t	-4.1764	-6.7039	

The Ultimate Test

	ERP Measures		
Stock Returns	*EP - T.Bond Rate*	*Implied ERP*	*Historical ERP*
Return in next year	0.1124	0.1746	-0.2172
R Std Err	0.0165	0.0162	0.0159
t	0.8759	1.3737	-1.7239
p-value (2-tailed)	0.3846	0.1746	0.0899
N	62	62	62
Annual Returns - Next 5 years	0.1093	**0.4673**	**-0.4458**
R Std Err	0.0176	0.0140	0.0143
t	0.8229	3.9554	-3.7264
p-value (2-tailed)	0.4140	0.0002	0.0005
N	58	58	58
Annual Returns - Next 10 years	0.1736	**0.6713**	**-0.5509**
R Std Err	0.0190	0.0108	0.0137
t	1.2590	6.4678	-4.7143
p-value (2-tailed)	0.2138	0.0000	0.0000
N	53	53	53
Correlations in bold are significant at the 5% level (2-tailed).			

With a caveat..



	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	-0.03037	0.02117	-0.07287	0.01213	-1.43446	0.15754	*Accepted*			
Implied ERP	3.31361	0.51232	2.28507	4.34214	6.46779	3.77004E-8	*Rejected*	1.	1.	0.67128
T (5%)	2.00758									
LCL - Lower limit of the 95% confidence interval										
UCL - Upper limit of the 95% confidence interval										

An Annual Ritual on Country Risk

- For the last decade, I have looked at country risk, in all its dimensions, towards the middle of each year for many reasons.
  - One is *curiosity*, as political and economic crises roll through regions of the world, roiling long-held beliefs about safe and risky countries.
  - The other is *pragmatic*, since it is almost impossible to value a company or business today without a clear sense of how risk exposure varies across the world, since for many companies, either the inputs or output are often in foreign markets.
- Since country risk is multidimensional and dynamic, my annual country risk update runs to more than a hundred pages, but I will try to summarize what the last year has brought in this post.

Drivers of Country Risk

Political Structure
- The degree of political freedom/democracy affects business risk, but the effects can cut both ways (good and bad).
- Democracies expose businesses to more continuous risk, as laws and regulations can change, when elections create government changes.
- Authoritarian regimes often offer the promise of predictability, and less risk on a period-to-period basis, but face more discontinous risk, since regime change is often violent and significantly disruptive.

Corruption
- Corruption operates as a hidden tax, reducing profitability and value for private businesses
- Businesses operating in corrupt locales face a choice of either accepting corruption as part of the cost of doing business or operating at a disadvantage to competitors who are less scruplous.

Country Risk

War & Violence
- Operating a business in a country that is more exposed to violence, from war, terrorism or internal strife, is more difficult than operating that business in a more peaceful environment.
- Businesses will face higher costs in operations and/ or from trying to insure themselves against violence.

Legal & Property Rights
- The value of a private business is dependent on a legal system that respects property rights and enforces those rights.
- In a country where there are no or weak property rights or that has a legal system that does not enforce those rights, businesses face more risks and have less value.
- Timeliness in enforcing legal rights matters as much as the due process, since rights not enforced in a timely manner provide weak protection.

1. Democracy, in degrees…

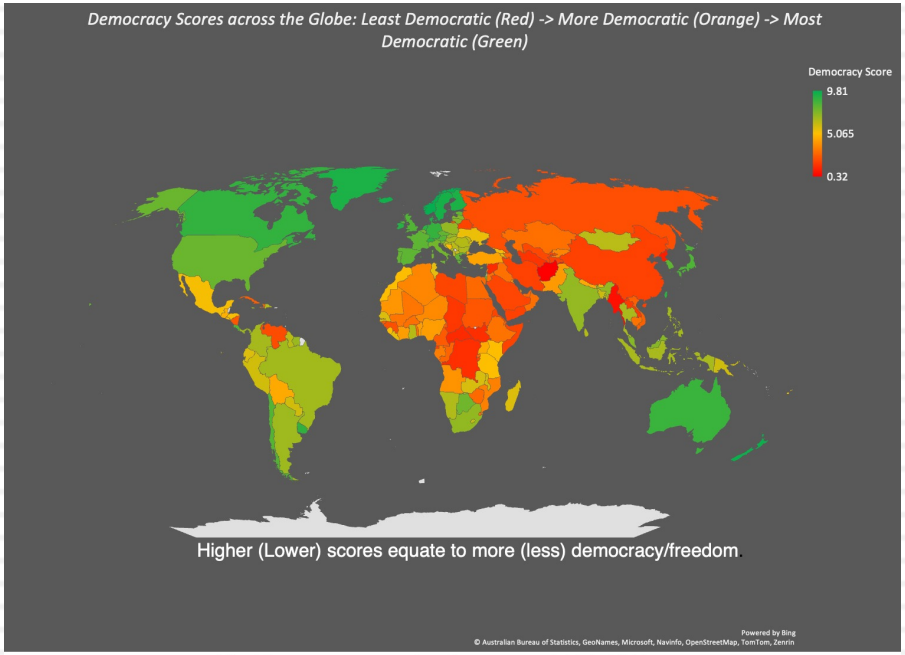
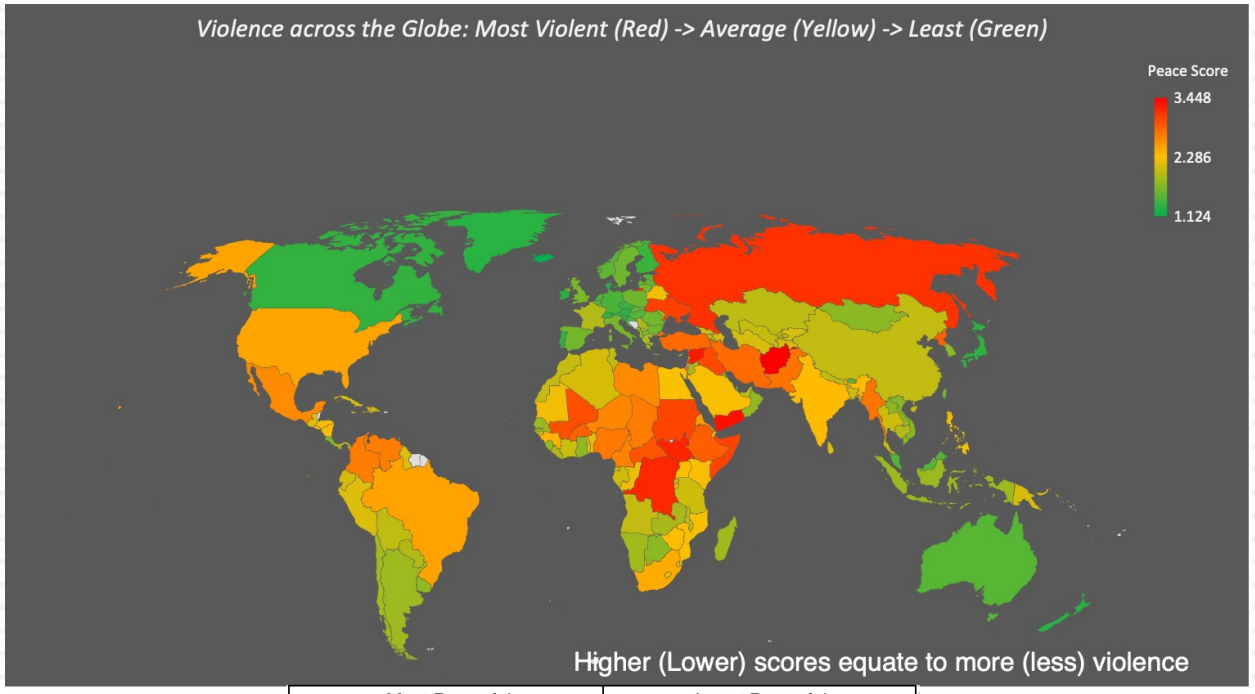


Table 1A: Democracy Index, by Region: 2006 -2022

	EIU Democracy Index Score (Higher = More Democratic)				
Region	*2022*	*2021*	*2016*	*2011*	*2006*
Asia & Australasia	5.46	5.46	5.74	5.51	5.44
Eastern Europe	5.39	5.36	5.43	5.50	5.76
Latin America	5.79	5.83	6.33	6.35	6.37
Middle East & North Africa	3.34	3.41	3.56	3.62	3.53
North America	8.37	8.36	8.56	8.59	8.64
Western Europe	8.36	8.22	8.40	8.40	8.60
Sub-Saharan Africa	4.14	4.12	4.37	4.32	4.24
World average	5.29	5.28	5.52	5.49	5.52

2. Violence and its Consequences



Most Peaceful		*Least Peaceful*	
Country	Score	Country	Score
Iceland	1.124	Afghanistan	3.448
Denmark	1.310	Yemen	3.350
Ireland	1.312	Syria	3.294
New Zealand	1.313	South Sudan	3.221
Austria	1.316	Congo (Dem Rep)	3.214
Singapore	1.332	Russia	3.142
Portugal	1.333	Ukraine	3.043
Slovenia	1.334	Somalia	3.036
Japan	1.336	Sudan	3.023
Switzerland	1.339	Iraq	3.006

3. Corruption, an implicit tax

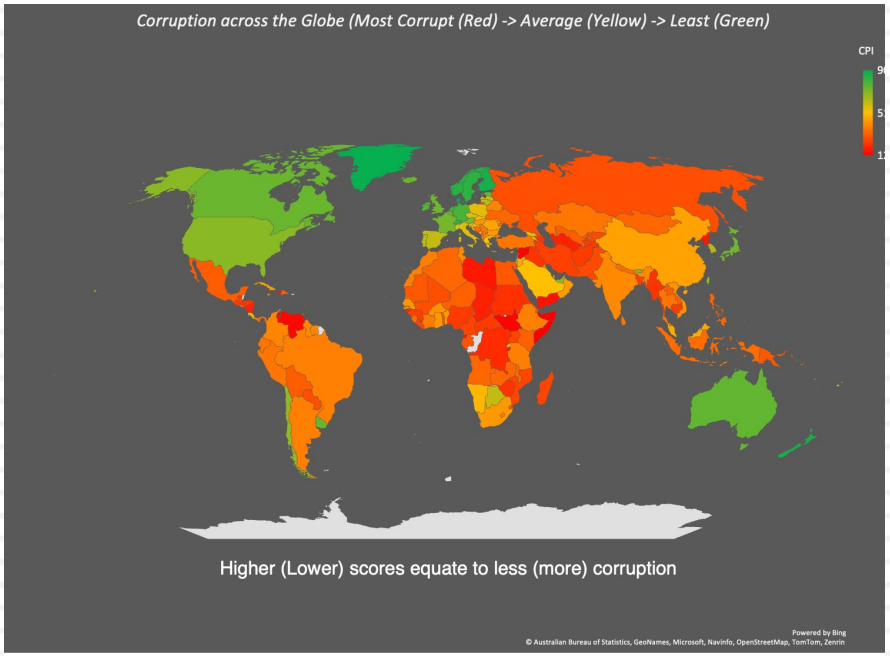


Table 1B: Most and Least Corrupt Countries – 2022

Least Corrupt		*Most Corrupt*	
Country	*Corruption Score*	*Country*	*Corruption Score*
Denmark	90	Somalia	12
Finland	87	South Sudan	13
New Zealand	87	Syria	13
Norway	84	Venezuela	14
Singapore	83	Yemen	16
Sweden	83	Burundi	17
Switzerland	82	Equatorial Guinea	17
Netherlands	80	Haiti	17
Germany	79	Korea, North	17
Ireland	77	Libya	17

4. Legal Protection or its Absence!

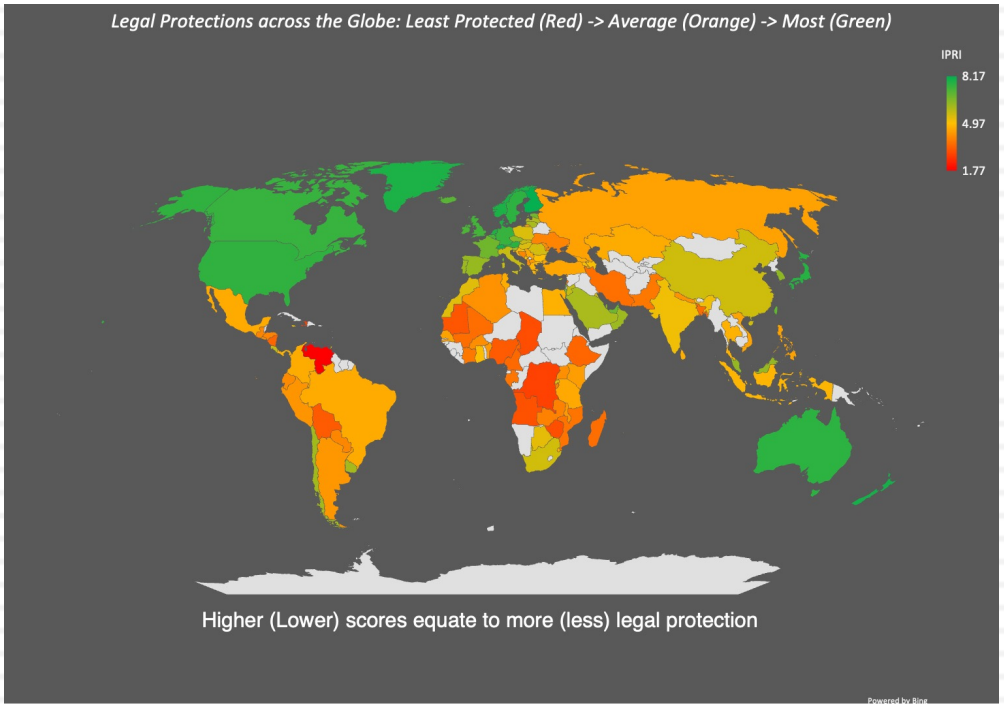


Table 2: Property Right Protection by Region – 2022

Region	*IPRI*	*LP*	*PPR*	*IPR*
Africa	4.1586	3.8824	4.2890	4.3044
Asia	5.4142	5.2175	5.8313	5.1939
Central America	4.3503	4.0418	4.3809	4.6282
European Union	6.4144	6.6245	6.1400	6.4789
North America	6.5538	6.0333	6.2315	7.3967
Oceania	7.7728	8.3443	7.5844	7.3898
Rest of Europe	5.2692	5.1637	5.3599	5.2839
South America	4.3253	4.1020	4.3227	4.5510

Measuring Country Risk

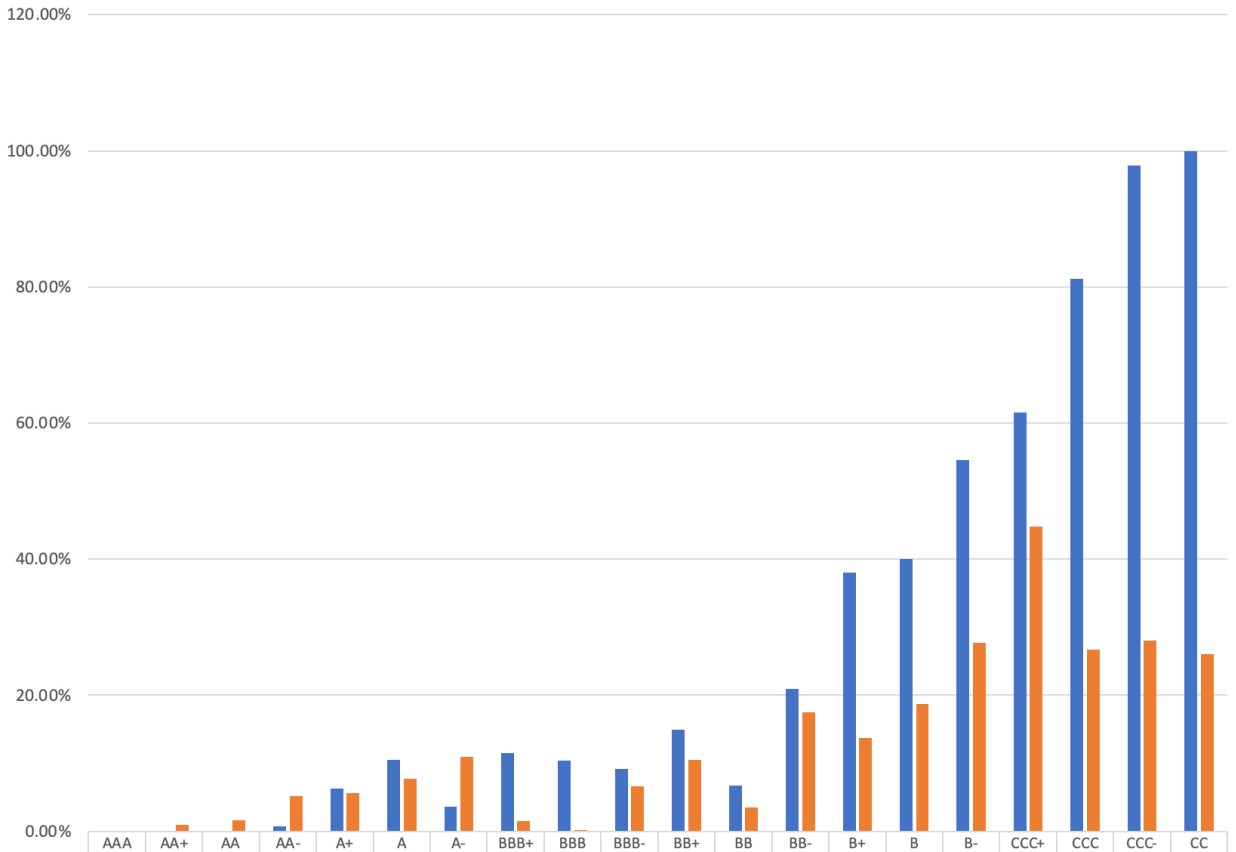
- **Default Risk**: Countries can default on their borrowings, and default risk looks at that likelihood.
  - Sovereign Ratings: Moody's, S&P and Fitch (among others) rate countries on both local and foreign currency debt.
  - Sovereign CDS spreads: This is a market-based estimate of how much it will cost you to buy insurance against sovereign default on an annual basis.
- **Composite Risk Scores**: There are services like PRS, the Economist and the World Bank that measure country risk on many dimensions and with a score.
  - Pluses: Bring in risks that may not be captured in default
  - Minuses: No standardization, Subjective, Difficult to compare across countries
- **Equity/Ownership Risk**: Should be greater than default risk, since equity investors are last in line, behind lenders.

1A. Sovereign Ratings

Country	S&P Rating	Moody's rating	Country	S&P Rating	Moody's rating	Country	S&P Rating	Moody's rating	Country	S&P Rating	Moody's rating
Abu Dhabi	AA+	Aa2	Curacao	BBB	Baa2	Laos	NA	Caa3	Rwanda	B+	B2
Albania	B+	B1	Cyprus	BBB	Ba1	Latvia	A+	A3	Saudi Arabia	A	A1
Andorra (Principality of)	BBB+	Baa2	Czech Republic	AA-	Aa3	Lebanon	D	C	Senegal	B+	Ba3
Angola	B-	B3	Denmark	AAA	Aaa	Liechtenstein	AAA	Aaa	Serbia	BB+	Ba2
Argentina	CCC-	Ca	Dominican Republic	BB	Ba3	Lithuania	A+	A2	Sharjah	NA	Ba1
Armenia	B+	Ba3	Ecuador	B-	Caa3	Luxembourg	AAA	Aaa	Singapore	AAA	Aaa
Aruba	BBB	Baa2	Egypt	B	B3	Macao	NA	Aa3	Slovakia	A+	A2
Australia	AAA	Aaa	El Salvador	CCC+	Caa3	Macedonia	BB-	Ba3	Slovenia	AA-	A3
Austria	AA+	Aa1	Estonia	AA-	A1	Malaysia	A-	A3	Solomon Islands	0	Caa1
Azerbaijan	BB+	Ba1	Ethiopia	CCC	Caa2	Maldives	NR	Caa1	South Africa	BB-	Ba2
Bahamas	B+	B1	Fiji	B+	B1	Mali	NR	Caa2	Spain	A	Baa1
Bahrain	B+	B2	Finland	AA+	Aa1	Malta	A-	A2	Sri Lanka	NA	Ca
Bangladesh	BB-	B1	France	AA	Aa2	Mauritius	NR	Baa3	St. Maarten	NA	Ba2
Barbados	B-	Caa1	Gabon	NA	Caa1	Mexico	BBB	Baa2	St. Vincent & the Grenadines	NA	B3
Belarus	NA	C	Georgia	BB	Ba2	Moldova	NR	B3	Suriname	Na	Caa3
Belgium	AA	Aa3	Germany	AAA	Aaa	Mongolia	B	B3	Swaziland	NA	B3
Belize	B-	Caa2	Ghana	NA	Ca	Montenegro	B	B1	Sweden	AAA	Aaa
Benin	B+	B1	Greece	BB+	Ba3	Montserrat	BBB-	Baa3	Switzerland	AAA	Aaa
Bermuda	A+	A2	Guatemala	BB	Ba1	Morocco	BB+	Ba1	Taiwan	AA+	Aa3
Bolivia	B-	Caa1	Guernsey (States of)	AA	Aa2	Mozambique	CCC+	Caa2	Tajikistan	B-	B3
Bosnia and Herzegovina	B	B3	Honduras	BB-	B1	Namibia	NR	B1	Tanzania	NA	B2
Botswana	BBB+	A3	Hong Kong	AA+	Aa3	Netherlands	AAA	Aaa	Thailand	BBB+	Baa1
Brazil	BB-	Ba2	Hungary	BBB-	Baa2	New Zealand	AA+	Aaa	Togo	B	B3
Bulgaria	BBB	Baa1	Iceland	A	A2	Nicaragua	B	B3	Trinidad and Tobago	BBB-	Ba2
Burkina Faso	CCC+	Caa1	India	BBB-	Baa3	Niger	NR	B3	Tunisia	NA	Caa2
Cambodia	NA	B2	Indonesia	BBB	Baa2	Nigeria	B-	Caa1	Turkey	B	B3
Cameroon	B-	B2	Iraq	B-	Caa1	Norway	AAA	Aaa	Turks and Caicos Islands	BBB+	Baa1
Canada	AAA	Aaa	Ireland	AA	Aa3	Oman	BB	Ba2	Uganda	B	B2
Cape Verde	B-	B3	Isle of Man	N/A	Aa3	Pakistan	CCC+	Caa3	Ukraine	CCC	Ca
Cayman Islands	NA	Aa3	Israel	AA-	A1	Panama	BBB	Baa2	United Arab Emirates	AA	Aa2
Chile	A	A2	Italy	BBB	Baa3	Papua New Guinea	B-	B2	United Kingdom	AA	Aa3
China	A+	A1	Jamaica	B+	B2	Paraguay	BB	Ba1	United States	AA+	Aaa
Colombia	BB+	Baa2	Japan	A+	A1	Peru	BBB	Baa1	Uruguay	BBB+	Baa2
Congo (Democratic Republic of)	B-	B3	Jersey (States of)	AA-	Aa3	Philippines	BBB+	Baa2	Uzbekistan	BB-	Ba3
Congo (Republic of)	CCC+	Caa2	Jordan	B+	B1	Poland	A-	A2	Venezuela	NA	C
Cook Islands	B	B2	Kazakhstan	BBB-	Baa2	Portugal	BBB+	Baa2	Vietnam	BB+	Ba2
Costa Rica	B+	B2	Kenya	B	B3	Qatar	AA	Aa3	Zambia	NA	Ca
Côte d'Ivoire	BB-	Ba3	Korea	AA	Aa2	Ras Al Khaimah (Emirate of)	A-	A3			
Croatia	BBB+	Baa2	Kuwait	A+	A1	Romania	BBB-	Baa3			
Cuba	NA	Ca	Kyrgyzstan	NA	B3	Russia	NR	Ca			

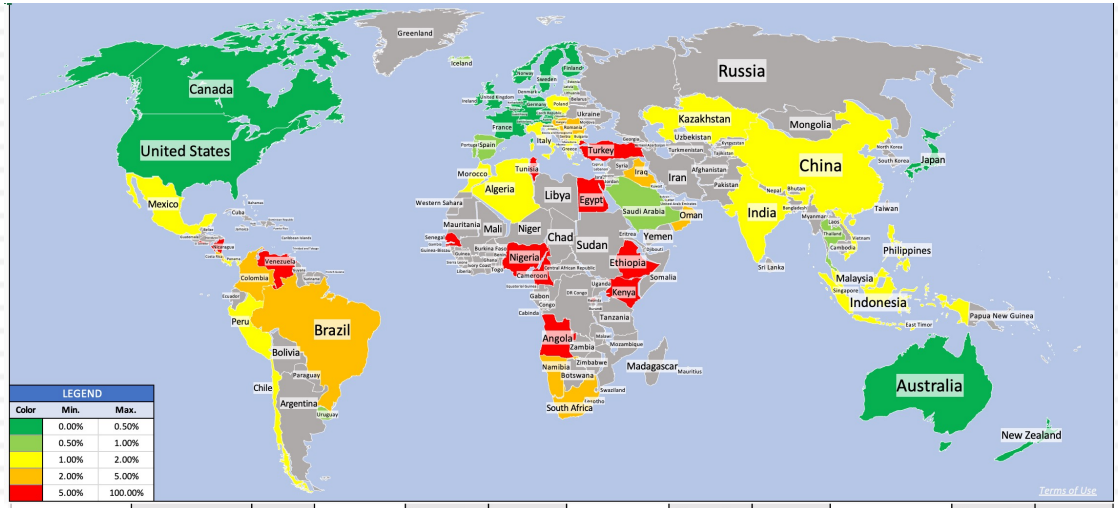
A History of Sovereign Default

Default Rate in 15-Month Horizon on Sovereign Foreign Currency vs Local Currency Bonds - 1975 to 2022



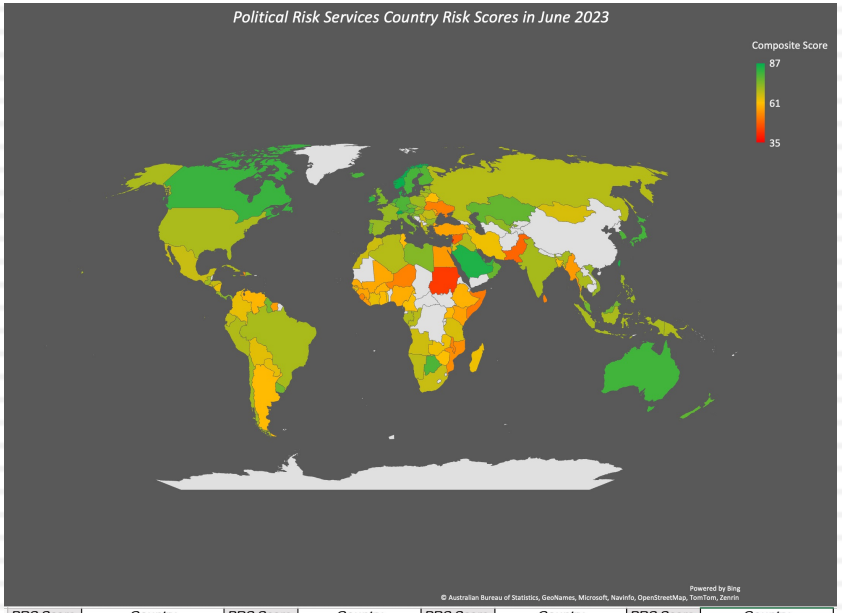
	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC
Sovereign Foreign Currency	0.00%	0.00%	0.00%	0.79%	6.29%	10.47%	3.58%	11.51%	10.34%	9.22%	14.98%	6.69%	20.96%	38.05%	40.04%	54.58%	61.56%	81.18%	97.83%	100.00%
Sovereign Local Currency	0.00%	0.91%	1.58%	5.14%	5.58%	7.68%	10.99%	1.48%	0.20%	6.64%	10.55%	3.50%	17.45%	13.70%	18.76%	27.72%	44.75%	26.74%	28.00%	26.05%

1B. Sovereign CDS Spreads



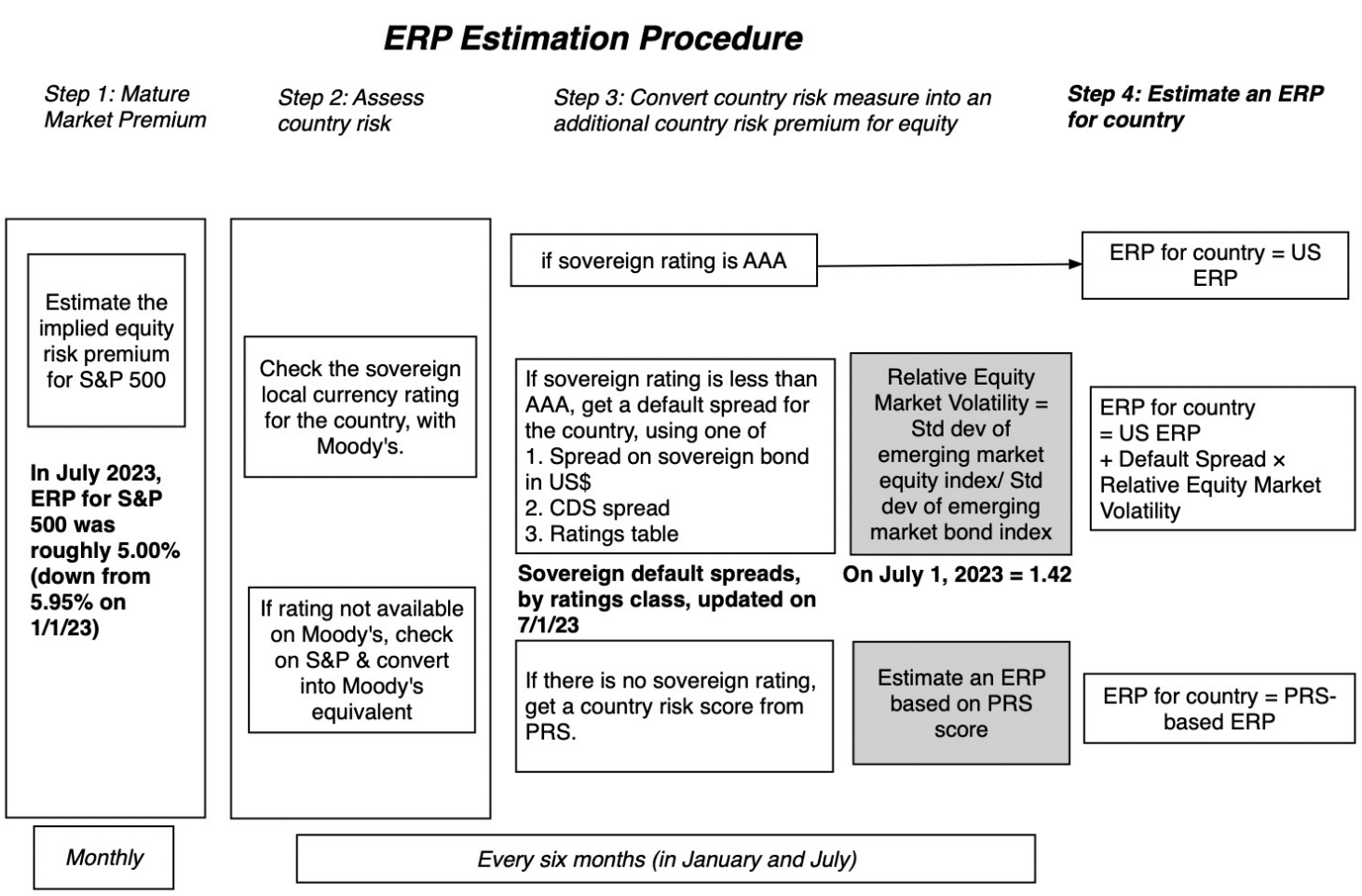
Country	Sovereign CDS Spread	Net of US	Country	Sovereign CDS Spread	Net of US	Country	Sovereign CDS Spread	Net of US	Country	Sovereign CDS Spread	Net of US
Abu Dhabi	0.70%	0.27%	El Salvador	14.88%	14.45%	Latvia	0.95%	0.52%	Rwanda	5.19%	4.76%
Algeria	1.59%	1.16%	Estonia	0.91%	0.48%	Lebanon	NA	NA	Saudi Arabia	0.89%	0.46%
Angola	10.47%	10.04%	Ethiopia	28.36%	27.93%	Lithuania	0.95%	0.52%	Senegal	5.39%	4.96%
Argentina	NA	NA	Finland	0.26%	0.00%	Malaysia	1.00%	0.57%	Serbia	2.77%	2.34%
Australia	0.33%	0.00%	France	0.41%	0.00%	Mexico	1.88%	1.45%	Slovakia	0.54%	0.11%
Austria	0.20%	0.00%	Germany	0.22%	0.00%	Morocco	1.95%	1.52%	Slovenia	0.71%	0.28%
Bahrain	3.16%	2.73%	Greece	1.31%	0.88%	Namibia	2.43%	2.00%	South Africa	3.71%	3.28%
Belgium	0.31%	0.00%	Guatamela	2.42%	1.99%	Netherlands	0.21%	0.00%	Spain	0.79%	0.36%
Brazil	2.88%	2.45%	Hong Kong	0.54%	0.11%	New Zealand	0.35%	0.00%	Sri Lanka	NA	NA
Bulgaria	1.40%	0.97%	Hungary	2.02%	1.59%	Nicaragua	5.20%	4.77%	Sweden	0.24%	0.00%
Cameroon	6.45%	6.02%	Iceland	0.81%	0.38%	Nigeria	7.50%	7.07%	Switzerland	0.28%	0.00%
Canada	0.41%	0.00%	India	1.42%	0.99%	Norway	0.23%	0.00%	Thailand	0.79%	0.36%
Chile	1.47%	1.04%	Indonesia	1.53%	1.10%	Oman	2.00%	1.57%	Tunisia	7.86%	7.43%
China	1.00%	0.57%	Iraq	4.80%	4.37%	Pakistan	NA	NA	Turkey	5.05%	4.62%
Colombia	3.54%	3.11%	Ireland	0.36%	0.00%	Panama	1.72%	1.29%	Ukraine	NA	NA
Costa Rica	3.33%	2.90%	Israel	0.80%	0.37%	Peru	1.46%	1.03%	United Kingdom	0.40%	0.00%
Croatia	1.12%	0.69%	Italy	1.45%	1.02%	Philippines	1.44%	1.01%	United States	0.43%	0.00%
Cyprus	1.14%	0.71%	Japan	0.26%	0.00%	Poland	1.02%	0.59%	Uruguay	0.95%	0.52%
Czech Republic	0.45%	0.02%	Kazakhstan	1.68%	1.25%	Portugal	0.71%	0.28%	Venezuela	11.57%	11.14%
Denmark	0.19%	0.00%	Kenya	7.85%	7.42%	Qatar	0.71%	0.28%	Vietnam	1.73%	1.30%
Dubai	1.26%	0.83%	Korea	0.41%	0.00%	Romania	2.33%	1.90%	Zambia	NA	NA
Egypt	13.19%	12.76%	Kuwait	0.70%	0.27%	Russia	NA	NA			

2. Country Risk Scores



PRS Score	Country	PRS Score	Country	PRS Score	Country	PRS Score	Country
< 50	Lebanon	62-64	Bangladesh	70-72	Brazil	78-80	Finland
	Sudan		Iran		India		Austria
	Pakistan		Madagascar		Chile		Hong Kong
	Syria		Togo		Estonia		Botswana
50-52	Korea, D.P.R.		Zambia		Guatemala		Germany
	Somalia		Colombia		Poland		Korea, Republic
	Ukraine		Cote d'Ivoire		Cyprus		Iceland
52-56	Sri Lanka		Nicaragua		Philippines	80-82	Sweden
	Malawi		Paraguay		Costa Rica		Japan
	Niger	64-66	Bolivia		Vietnam		Netherlands
	Sierra Leone		Guinea-Bissau		Bulgaria		Australia
	Haiti		Albania		China, Peoples' Rep.		Qatar
	Mozambique		Jordan		Dominican Republic		Canada
	Egypt		Mongolia		France		Kuwait
	Yemen, Republic		Tanzania		Spain		Brunei
56-58	Myanmar	66-68	El Salvador	72-74	Latvia		United Arab Emirates
	Liberia		Gambia		Jamaica	82-85	Ireland
	Suriname		Angola		Uzbekistan		Saudi Arabia
	Kenya		Morocco		Azerbaijan		Denmark
	Turkey		Serbia		Hungary		Singapore
	Guinea		Mexico		Malta		Taiwan
58-60	Mali		South Africa		Libya	> 85	Luxembourg
	Moldova		Honduras		Panama		Norway
	Senegal		Romania	74-76	Croatia		Switzerland
	Nigeria		Ecuador		Israel		
	Burkina Faso	68-70	Namibia		Slovenia		
	Ethiopia		Congo, Republic		Bahamas		
	Venezuela		Bahrain		Italy		
60-62	Uganda		Algeria		United Kingdom		
	Argentina		Russia		Belgium		
	Congo, Dem. Republic		Cuba		Guyana		
	Armenia		Greece		Portugal		
	Belarus		Gabon		Uruguay		
	Ghana		Iraq		Czech Republic		
	Tunisia		Papua New Guinea		Malaysia		
	Zimbabwe		Peru	76-78	Oman		
	Cameroon		Slovakia		Trinidad & Tobago		
			Lithuania		Kazakhstan		
			Thailand		New Zealand		
			Indonesia				
			United States				

3. Equity Risk Premiums: My Approach



ERP : July 2023

Andorra	Baa2	2.89%	7.89%
Austria	Aa1	0.61%	5.61%
Belgium	Aa3	0.91%	5.91%
Cyprus	Ba1	3.80%	8.80%
Denmark	Aaa	0.00%	5.00%
Finland	Aa1	0.61%	5.61%
France	Aa2	0.75%	5.75%
Germany	Aaa	0.00%	5.00%
Greece	Ba3	5.46%	10.46%
Guernsey (States of)	Aa2	0.75%	5.75%
Iceland	A2	1.28%	6.28%
Ireland	Aa3	0.91%	5.91%
Isle of Man	Aa3	0.91%	5.91%

Italy	Baa3	3.33%	8.33%
Jersey (States of)	Aa3	0.91%	5.91%
Liechtenstein	Aaa	0.00%	5.00%
Luxembourg	Aaa	0.00%	5.00%
Malta	A2	1.28%	6.28%
Netherlands	Aaa	0.00%	5.00%
Norway	Aaa	0.00%	5.00%
Portugal	Baa2	2.89%	7.89%
Spain	Baa1	2.43%	7.43%
Sweden	Aaa	0.00%	5.00%
Switzerland	Aaa	0.00%	5.00%
Turkey	B3	9.86%	14.86%
United Kingdom	Aa3	0.91%	5.91%
W.Europe		**1.37%**	**6.37%**

Canada	Aaa	0.00%	5.00%
United States	Aaa	0.00%	5.00%
US & Canada		**0.00%**	**5.00%**

Caribbean		14.38%	19.38%

Argentina	Ca	18.21%	23.21%
Belize	Caa2	13.66%	18.66%
Bolivia	Caa1	11.38%	16.38%
Brazil	Ba2	4.57%	9.57%
Chile	A2	1.28%	6.28%
Colombia	Baa2	2.89%	7.89%
Costa Rica	B2	8.35%	13.35%
Ecuador	Caa3	15.18%	20.18%
El Salvador	Caa3	15.18%	20.18%
Guatemala	Ba1	3.80%	8.80%
Honduras	B1	6.83%	11.83%
Mexico	Baa2	2.89%	7.89%
Nicaragua	B3	9.86%	14.86%
Panama	Baa2	2.89%	7.89%
Paraguay	Ba1	3.80%	8.80%
Peru	Baa1	2.43%	7.43%
Suriname	Caa3	15.18%	20.18%
Uruguay	Baa2	2.89%	7.89%
Venezuela	C	24.82%	29.82%
Latin America		**6.03%**	**11.03%**

Angola	B3	9.86%	14.86%
Benin	B1	6.83%	11.83%
Botswana	A3	1.82%	6.82%
Burkina Faso	Caa1	11.38%	16.38%
Cameroon	B2	8.35%	13.35%
Cape Verde	B3	9.86%	14.86%
Congo ((DR)	B3	9.86%	14.86%
Congo (Rep)	Caa2	13.66%	18.66%
Côte d'Ivoire	Ba3	5.46%	10.46%
Egypt	B3	9.86%	14.86%
Ethiopia	Caa2	13.66%	18.66%
Gabon	Caa1	11.38%	16.38%
Ghana	Ca	18.21%	23.21%
Kenya	B3	9.86%	14.86%
Mali	Caa2	13.66%	18.66%
Mauritius	Baa3	3.33%	8.33%
Morocco	Ba1	3.80%	8.80%
Mozambique	Caa2	13.66%	18.66%
Namibia	B1	6.83%	11.83%
Niger	B3	9.86%	14.86%
Nigeria	Caa1	11.38%	16.38%
Rwanda	B2	8.35%	13.35%
Senegal	Ba3	5.46%	10.46%
South Africa	Ba2	4.57%	9.57%
Swaziland	B3	9.86%	14.86%
Tanzania	B2	8.35%	13.35%
Togo	B3	9.86%	14.86%
Tunisia	Caa2	13.66%	18.66%
Uganda	B2	8.35%	13.35%
Zambia	Ca	18.21%	23.21%
Africa		**9.26%**	**14.26%**

Albania	B1	6.83%	11.83%
Armenia	Ba3	5.46%	10.46%
Azerbaijan	Ba1	3.80%	8.80%
Belarus	C	24.82%	29.82%
Bosnia and Herzegovina	B3	9.86%	14.86%
Bulgaria	Baa1	2.43%	7.43%
Croatia	Baa2	2.89%	7.89%
Czech Republic	Aa3	0.91%	5.91%
Estonia	A1	1.07%	6.07%
Georgia	Ba2	4.57%	9.57%
Hungary	Baa2	2.89%	7.89%
Kazakhstan	Baa2	2.89%	7.89%
Kyrgyzstan	B3	9.86%	14.86%
Latvia	A3	1.82%	6.82%
Lithuania	A2	1.28%	6.28%
Macedonia	Ba3	5.46%	10.46%
Moldova	B3	9.86%	14.86%
Montenegro	B1	6.83%	11.83%
Poland	A2	1.28%	6.28%
Romania	Baa3	3.33%	8.33%
Russia	Ca	18.21%	23.21%
Serbia	Ba2	4.57%	9.57%
Slovakia	A2	1.28%	6.28%
Slovenia	A3	1.82%	6.82%
Tajikistan	B3	9.86%	14.86%
Ukraine	Ca	18.21%	23.21%
Uzbekistan	Ba3	5.46%	10.46%
E. Europe & Russia		10.35%	15.35%

Abu Dhabi	Aa2	0.75%	5.75%
Bahrain	B2	8.35%	13.35%
Iraq	Caa1	11.38%	16.38%
Israel	A1	1.07%	6.07%
Jordan	B1	6.83%	11.83%
Kuwait	A1	1.07%	6.07%
Lebanon	C	24.82%	29.82%
Oman	Ba2	4.57%	9.57%
Qatar	Aa3	0.91%	5.91%
Ras Al Khaimah (Emirate	A3	1.82%	6.82%
Saudi Arabia	A1	1.07%	6.07%
Sharjah	Ba1	3.80%	8.80%
United Arab Emirates	Aa2	0.75%	5.75%
Middle East		**2.16%**	**7.16%**

Frontier (unrated) Countries			
Algeria	68.75	5.46%	10.46%
Brunei	81.75	0.91%	5.91%
Gambia	66	8.35%	13.35%
Guinea	57.5	13.66%	18.66%
Guinea-Bissau	64.5	8.35%	13.35%
Guyana	75	2.43%	7.43%
Haiti	54.5	18.21%	23.21%
Iran	62.75	9.86%	14.86%
Korea, D.P.R.	51	18.21%	23.21%
Liberia	56.25	15.18%	20.18%
Libya	73.75	2.89%	7.89%
Madagascar	62.75	9.86%	14.86%
Malawi	52.75	18.21%	23.21%
Myanmar	56	15.18%	20.18%
Sierra Leone	53	18.21%	23.21%
Somalia	51.5	18.21%	23.21%
Sudan	43	24.82%	29.82%
Syria	48.75	24.82%	29.82%
Yemen, Republic	55.75	15.18%	20.18%
Zimbabwe	61.25	11.38%	16.38%

Bangladesh	B1	6.83%	11.83%
Cambodia	B2	8.35%	13.35%
China	A1	1.07%	6.07%
Fiji	B1	6.83%	11.83%
Hong Kong	Aa3	0.91%	5.91%
India	Baa3	3.33%	8.33%
Indonesia	Baa2	2.89%	7.89%
Japan	A1	1.07%	6.07%
Korea	Aa2	0.75%	5.75%
Laos	Caa3	15.18%	20.18%
Macao	Aa3	0.91%	5.91%
Malaysia	A3	1.82%	6.82%
Maldives	Caa1	11.38%	16.38%
Mongolia	B3	9.86%	14.86%
Pakistan	Caa3	15.18%	20.18%
Papua New Guinea	B2	8.35%	13.35%
Philippines	Baa2	2.89%	7.89%
Singapore	Aaa	0.00%	5.00%
Solomon Islands	Caa1	11.38%	16.38%
Sri Lanka	Ca	18.21%	23.21%
Taiwan	Aa3	0.91%	5.91%
Thailand	Baa1	2.43%	7.43%
Vietnam	Ba2	4.57%	9.57%
Asia		**1.74%**	**6.74%**

Australia	Aaa	0.00%	5.00%
Cook Islands	B2	8.35%	13.35%
New Zealand	Aaa	0.00%	5.00%
Aus & NZ		**0.00%**	**5.00%**

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

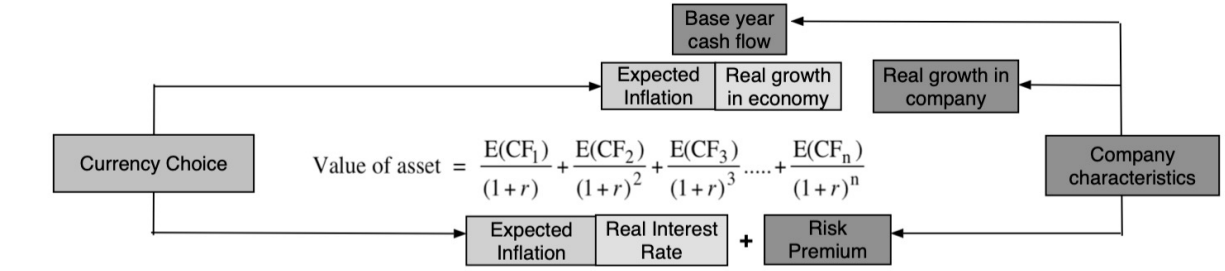
Regional numbers are GDP-

Caveats and Questions

- I am not a country risk researcher, and I try not to let my personal views alter the numbers that emerge from the analysis, since that would open the door to my biases. I will use three countries in the latest update to illustrate my point:
  1. Saudi Arabia: As I noted earlier, using default spreads as my starting point can result in understating the risk premium for countries like Saudi Arabia, which score low on default risk but high on other risks.
  2. Libya: As indicated in the last section, the equity risk premium for Libya, an unrated country, is entirely based upon the country risk score from PRS. That country risk score is surprisingly high (indicating low risk) and it results in an equity risk premium that is low, relative to other countries in the region.
  3. China: In the aftermath of a Beijing crackdown on Chinese tech giants and talk of a trade war between China and the US, the perception seems to be that China has become a riskier place to invest. That may or may not be true, but looking at how Chinese equities are priced, trading still at some of the highest multiples of earnings in the world, investors in equity markets don't seem to share that view (yet).
- With all three of these countries, I have chosen not to change the numbers that resulted from my analysis, lest I be accused of bias, but if you have strong views on these countries or others, nothing is stopping you from replacing my numbers with yours.

Company Hurdle Rates: The Currency Question

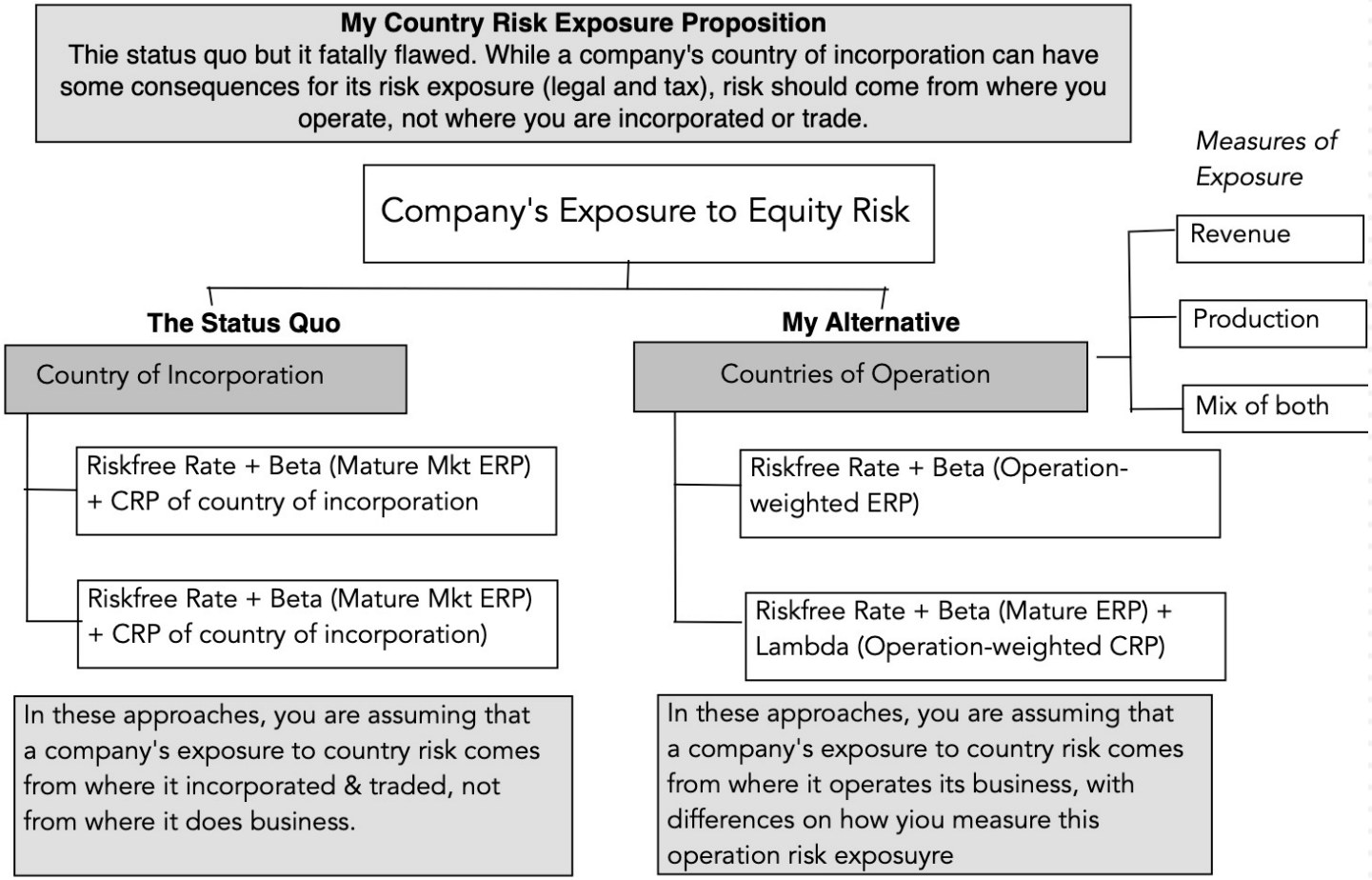
- **Currency Choice**: Each currency brings its own expectations of inflation, with higher inflation currencies leading to higher growth rates for cash flows and higher discount rates.



The Currency Invariance Proposition: When you change the currency in which you do your valuation or investment analysis, you change the expected inflation that you incorporate into your numbers, but your real growth and risk premiums remain what they are.

- **Currency Risk**: While analysts are often tempted to try to adjust discount rates for currency risk, caution is called for:
  - To the extent that currency risk adds to the operating risk of a company, it is, in my view, already embedded in the equity risk premiums that I have computed in the last section.
  - The other reason to tread lightly with currency risk is that for investors with global portfolios, it becomes diversifiable risk, as some companies benefit as a currency strengthens or weakened more than expected and other companies lose for the same reason.

Company Exposure to Country Risk



ERP: Concluding Thoughts..

1. There is a true ERP: The fact that the the true equity risk premium is unobservable does not mean that it does not exist. In other words, the notion that you can get away using an equity risk premium you want, as long as you have a justification and are consistent, is absurd.
2. Not all estimation approaches are created equal: While there are many approaches to estimating the equity risk premium, and they yield very different numbers, some of these approaches have more heft, because they offer better predictive power.
3. Your end game matters: I am not a market timer and estimate an equity risk premium primarily because I need it as an input in valuation and corporate finance. That requires an approach that yields positive values (ruling out the EP-based ERP) and moves with with stock returns in subsequent periods (eliminating historical ERP).
4. Market timers, beware: If you are using equity risk premiums or even earnings yield for market timing, recognize that having a high R-squared or correlation in past returns will not often translate into market-timing profits, for two reasons.
    1. First, the past is not always prologue, and market and economic structures have shifted, undercutting a key basis for using historical data.
    2. Second, even if the correlations and regressions hold, you may still find it hard to profit from them, since you (and your clients, if you are a portfolio manager) may be bankrupt, before your predictions play out.