



**RISK = DANGER PLUS OPPORTUNITY**

**Myths, Mysteries and Miconceptions!**

# The Lead In

- Risk is a central theme in finance and investing, but one that is surprisingly misunderstood and misconstrued and look at variations in risk across sectors and geographies, using both price-based and intrinsic measures of risk.
- There are wide variations in risk across companies and countries, and those variations can lead to differences in expected returns and hurdle rates, central to both corporate finance and investing judgments.
- With private company businesses, anything goes seems to be the motto, as appraisers add a series of premiums to their discount rates to get them “high enough” to pass muster.

# What is risk? Finance's Mistakes!

- First, it has put too much emphasis on market-price driven measures of risk, where price volatility has become the default measure of risk, in spite of evidence indicating that much of this volatility has nothing to do with fundamentals.
- Second, in our zeal to measure risk with numbers, we have lost sight of reality that the effects of risk are as much on human psyche as they are on economics.
- Third, by making investing a choice between good (higher returns) and bad (higher risk), a message is sent, perhaps unwittingly, that risk is bad, something to be avoided or hedged.

# Risk: A Healthier Perspective

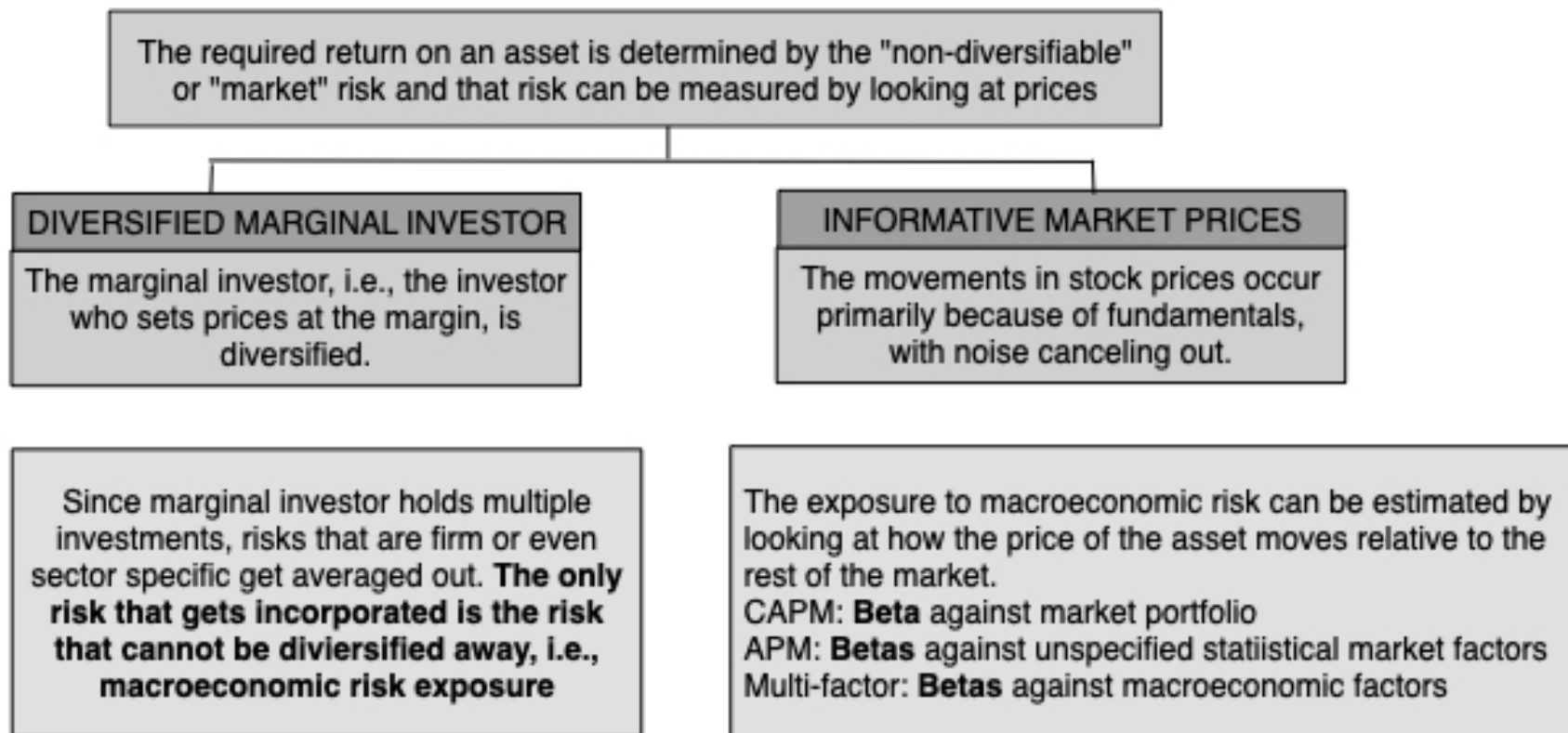
危機 = Danger + Opportunity

- Thinking of risk as a combination of danger and opportunity is, in my view, a perfect pairing.
  - By linking the two at the hip, it sends the clear and very important signal that you cannot have one (opportunity), without exposing yourself to the other (danger).
  - It also removes the negativity associated to risk, and brings home the truth that you build a great business not by avoiding danger (risk), but by taking the right risks, while getting fair returns for those risk.

# Breaking down risk into buckets...

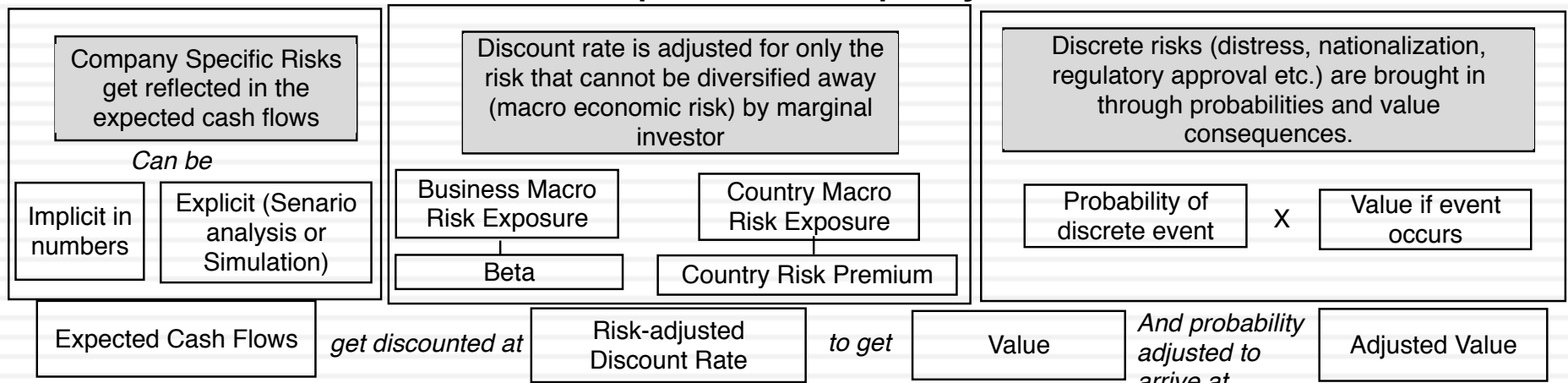
<b>Estimation versus Economic Risks</b>		
Estimation Risks are risks that you can reduce or mitigate by collecting more data or doing more research.	Economic Risks are risks that will exist no matter how much research you do or data you collect.	If the bulk of the risk in a company is economic risk, your valuation will be imprecise, no matter how hard you try.
<b>Micro versus Macro Risks</b>		
Micro Risks are risks that are specific to the company or the sector it operates in, from business models to management quality.	Macro Risks are risks that come from movements in the economy, interest rates, inflation or from acts of God	If you hold a diversified portfolio, micro risks will average out across your portfolio, and only macro risk has to be incorporated into your discount rate.
<b>Continuous versus Discrete risks</b>		
Continuous Risks are risks that affect a firm through time, affecting earnings, cash flows and value on a continuous basis.	Discrete Risks are risks that lie hidden for periods before emerging suddenly and sometimes in catastrophic form.	Continuous risk are easier to hedge, plan for and incorporate into valuation than discrete risks.

# Risk Measurement: The Markowitz Breakthrough!

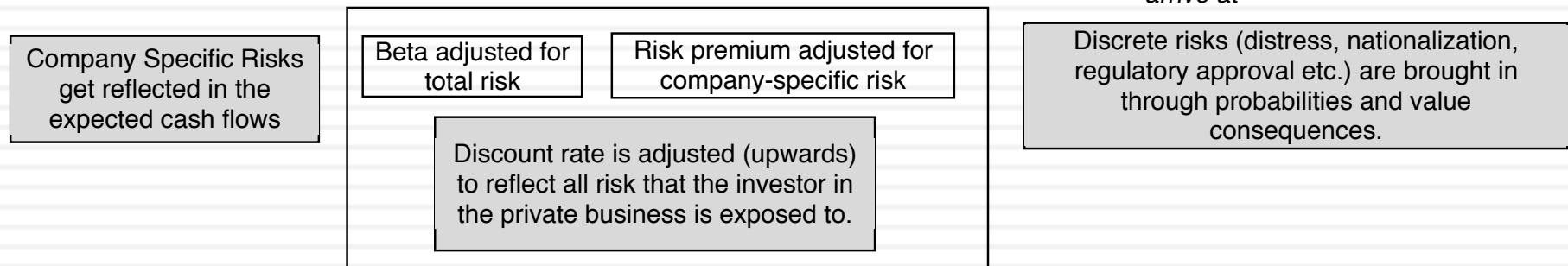


# The Standard Template for Risk Adjusting Value

## For a public company



## For a private business



# Room to disagree?

- By building on the assumptions that the investors pricing a business are diversified, and price-based risk measures, modern portfolio theory has exposed itself to criticism from those who disagree with one or both of these assumptions.
  - ▣ Thus, there are old-time value investors whose primary disagreement is on the use of pricing measures for risk, arguing that risk has to come from numbers that drive intrinsic value - earnings and cash flows.
  - ▣ There are other investors who are at peace with price-based risk measures but disagree with the "diversified marginal investor" assumption, and they are more intent on finding risk measures that incorporate not just the macro components of risk, but also their micro concerns.



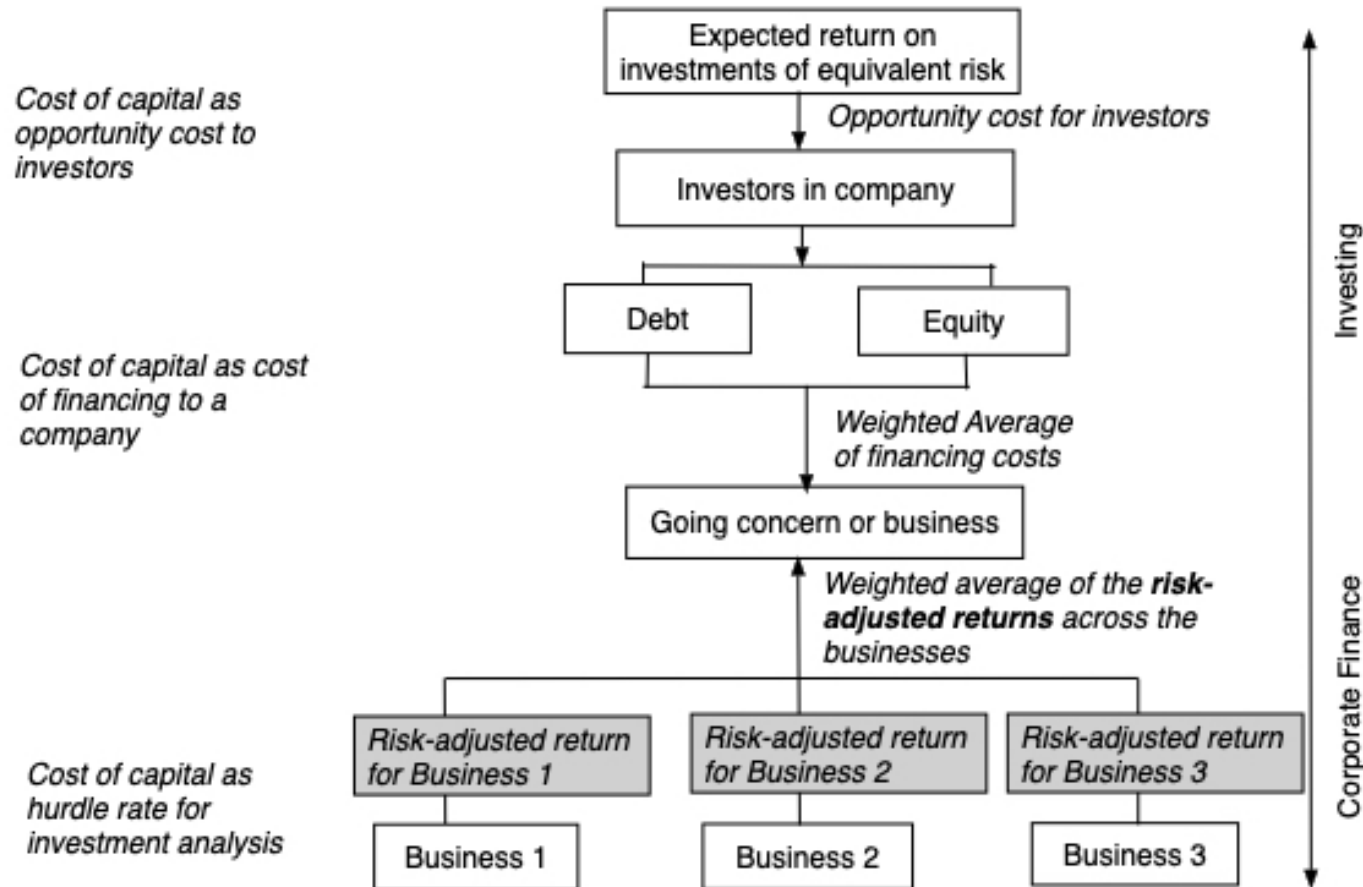
# Risk Differences across Companies – Price-based Risk Measures!

- My data universe includes all publicly traded companies, and since they are publicly traded, computing price-based risk measures is straight forward. That said, it should be noted that liquidity varies widely across these companies, with some located in markets where trading is rare and others in markets, with huge trading volumes.
- With that caveat in mind, I computed three risk-based measures -
  - *a simplistic measure of range*, where I look at the distance between the high and low prices, and scale it to the mid-point,
  - *the standard deviation in stock prices*, a conventional measure of volatility and
  - *beta*, a measure of that portion of a company's risk that is market-driven.

# Intrinsic Risk Measures

- Price-based risk measures have their advantages, including being constantly updated, but they do have their limits, especially when liquidity is low or when market prices are not trustworthy.
- In this section, I will look at three measures of intrinsic risk –
  - ▣ *whether a company is making or losing money*, with the latter being riskier,
  - ▣ *the variability in earnings*, with less stable earnings translating to higher risk, and
  - ▣ *the debt load of companies*, with more debt and debt charges conferring more risk on companies.

# Risk and Investing: The Cost of Capital – Swiss Army Knife in Finance

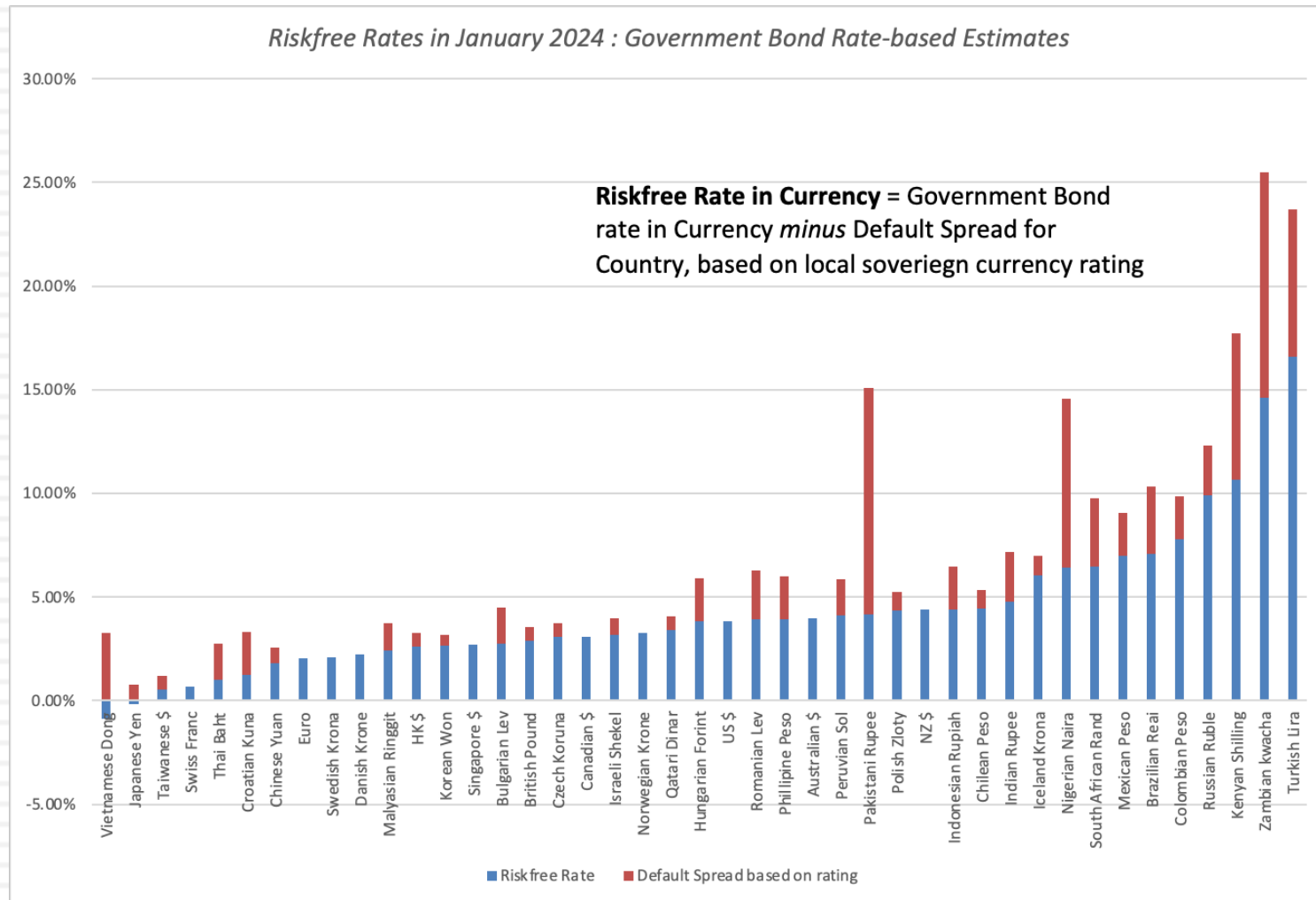


# Classic Risk & Return: Cost of Equity

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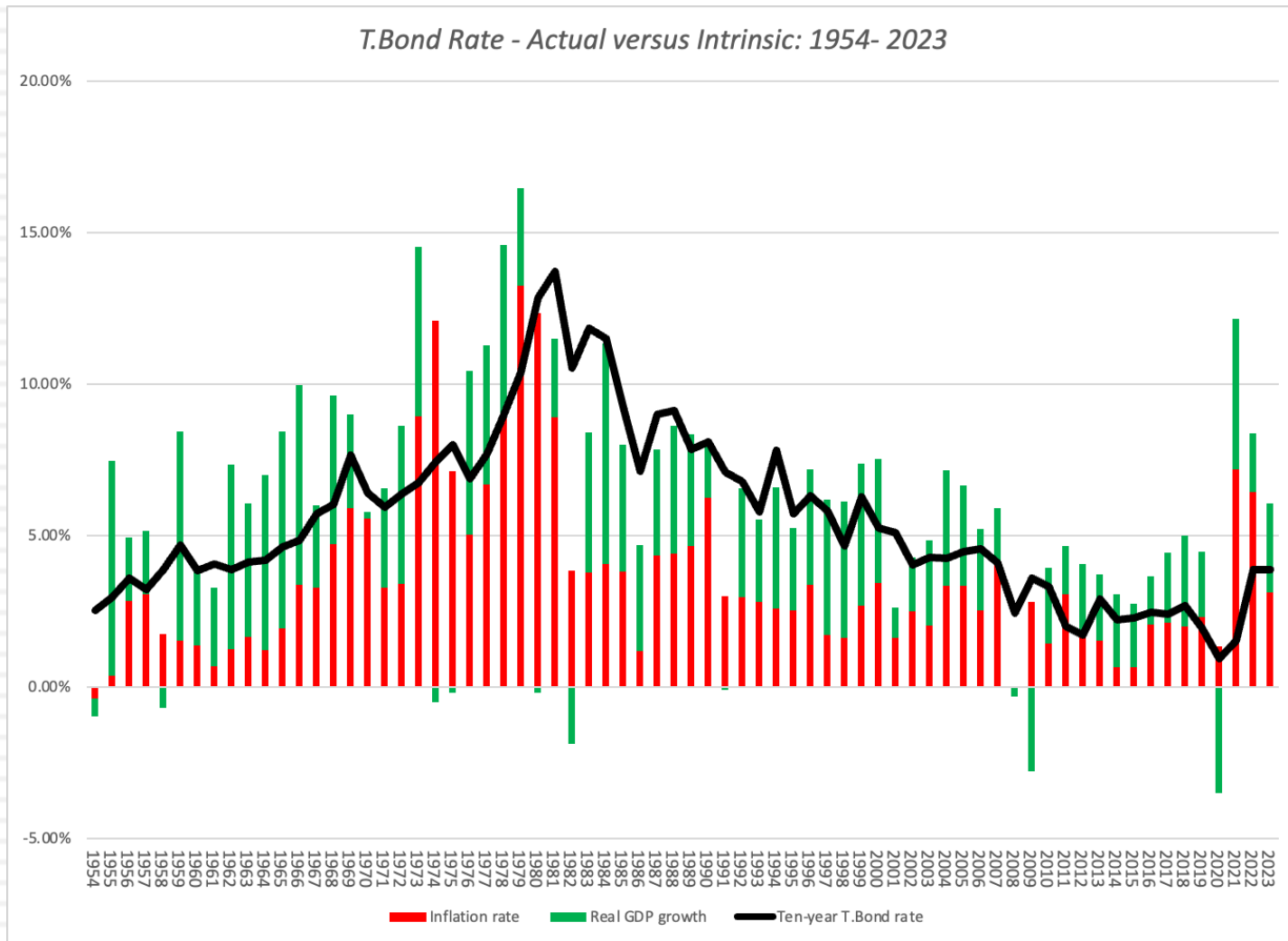
- In the CAPM, the cost of equity:  
Cost of Equity = Riskfree Rate + Equity Beta \* (Equity Risk Premium)
- In APM or Multi-factor models, you still need a risk free rate, as well as betas and risk premiums to go with each factor.
- To use any risk and return model, you need
  - A risk free rate as a base
  - A single equity risk premium (in the CAPM) or factor risk premiums, in the the multi-factor models
  - A beta (in the CAPM) or betas (in multi-factor models)

# 1a. The Riskfree Rate – Currency Effect



# 1b. Riskfree Rates – over time

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## 2a. The Equity Risk Premium – Static and Backward-looking

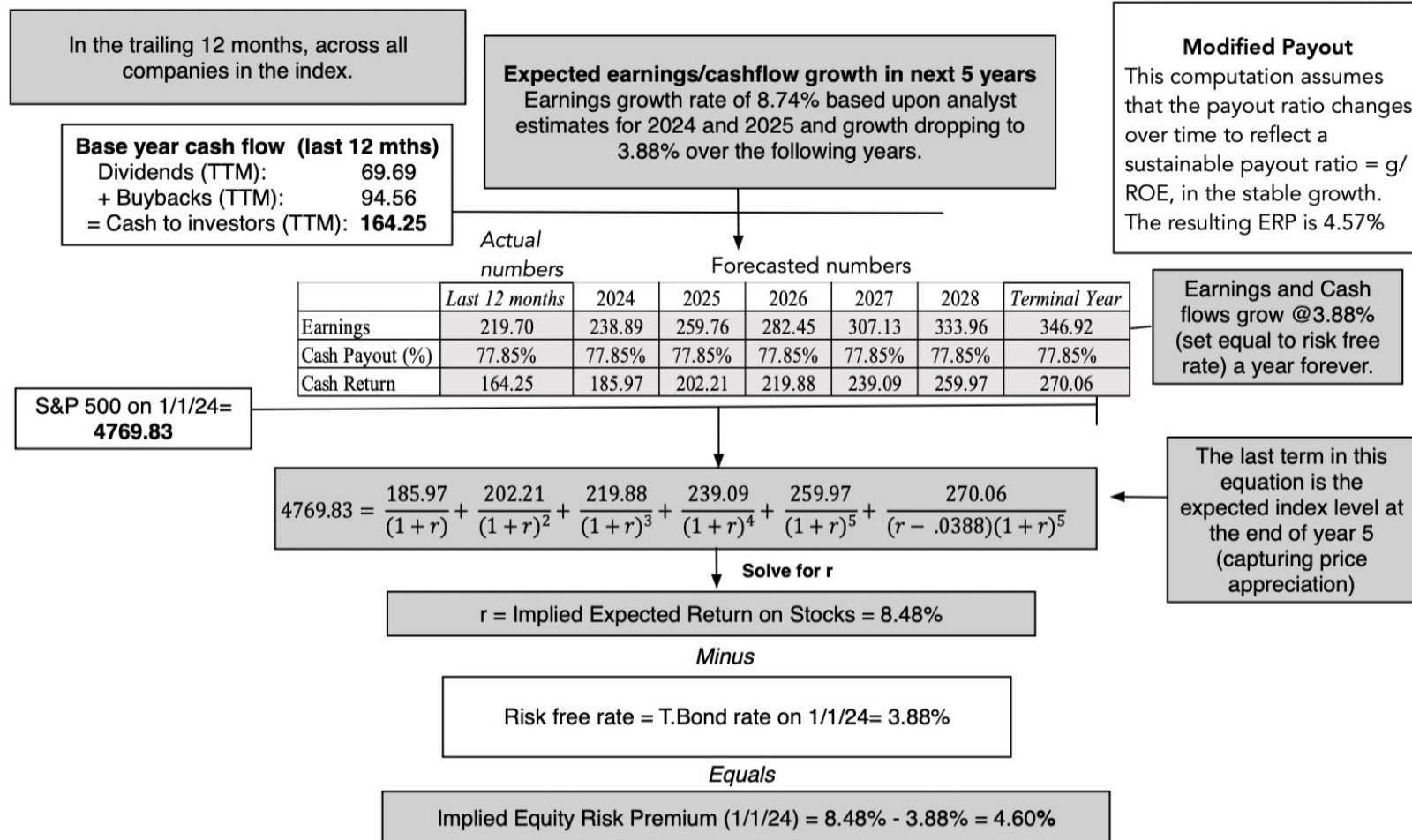
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- The historical premium is the premium that stocks have historically earned over riskless securities.
- While the users of historical risk premiums act as if it is a fact (rather than an estimate), it is sensitive to
  - ▣ How far back you go in history...
  - ▣ Whether you use T.bill rates or T.Bond rates
  - ▣ Whether you use geometric or arithmetic averages.
- For instance, looking at the US:

	<i>Arithmetic Average</i>		<i>Geometric Average</i>	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
<b>1928-2023</b>	<b>8.32%</b>	<b>6.80%</b>	<b>6.50%</b>	<b>5.23%</b>
Std Error	<i>2.03%</i>	<i>2.14%</i>		
<b>1974-2023</b>	<b>8.18%</b>	<b>5.95%</b>	<b>6.79%</b>	<b>4.97%</b>
Std Error	<i>2.45%</i>	<i>2.73%</i>		
<b>2014-2023</b>	<b>11.70%</b>	<b>11.17%</b>	<b>10.63%</b>	<b>10.44%</b>
Std Error	<i>4.97%</i>	<i>3.86%</i>		

# 2b. A Dynamic and Forward-looking alternative

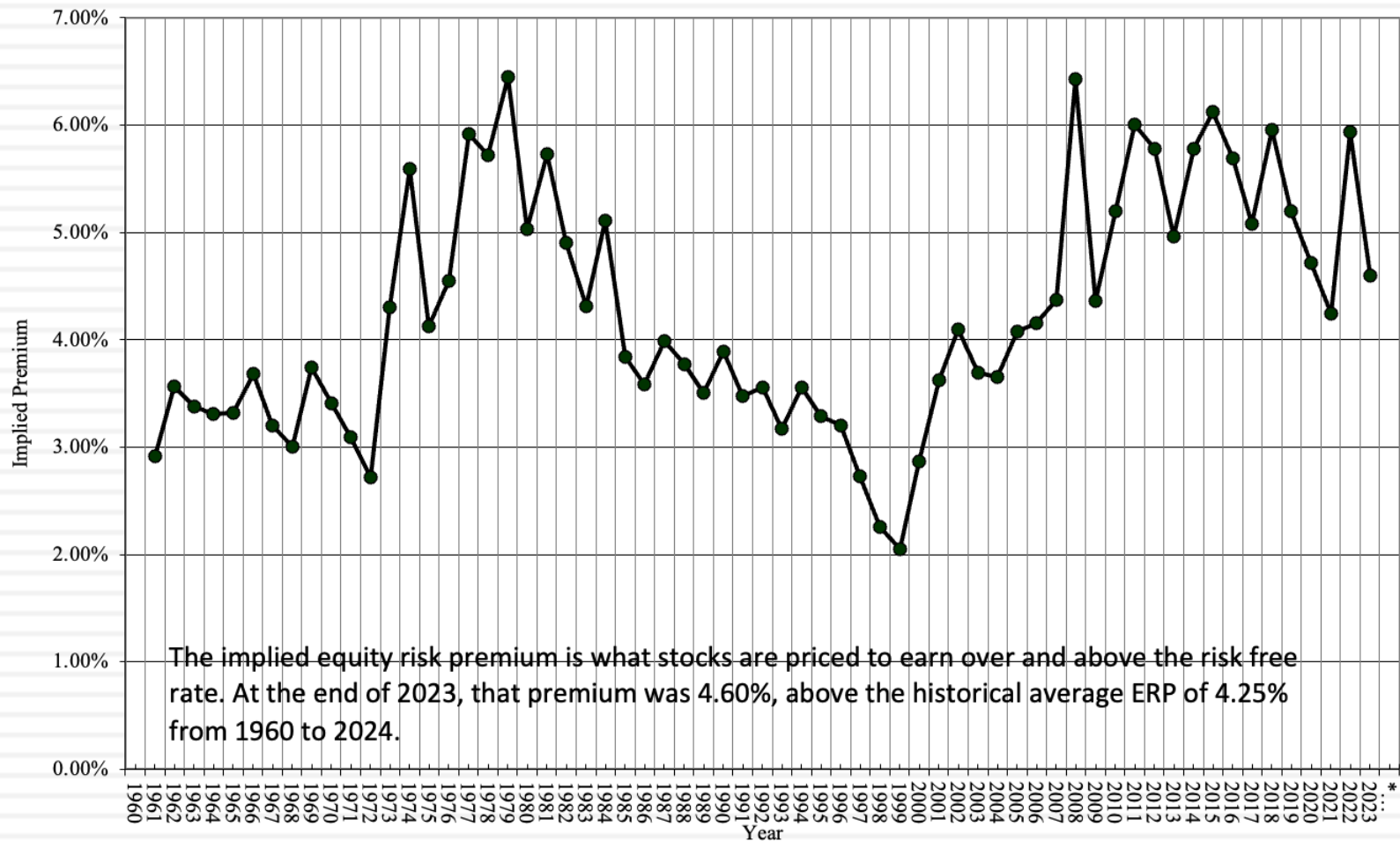
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# Implied Premiums in the US: 1960-2023

*Implied Equity Risk Premium for US Equity Market: 1960-2023*

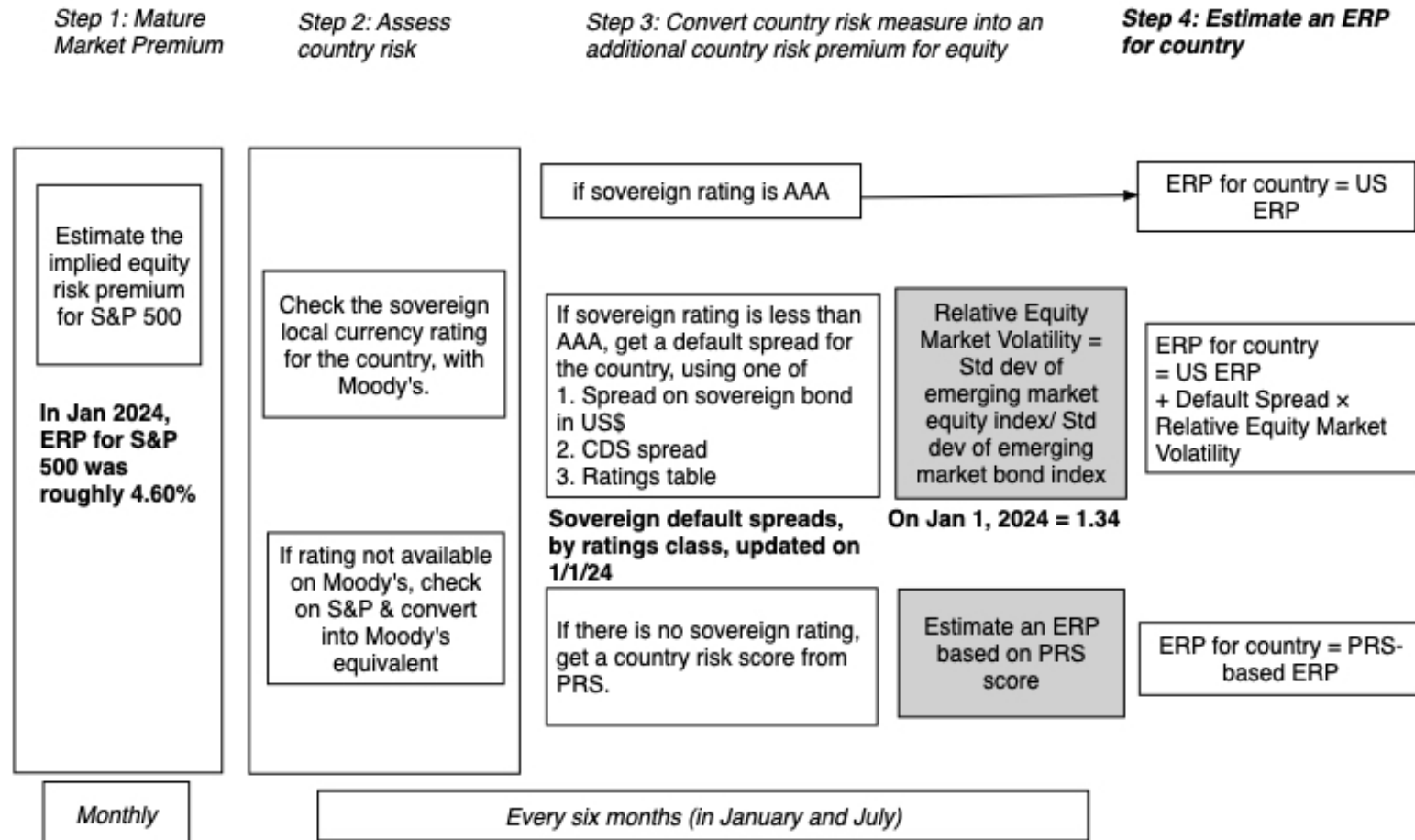


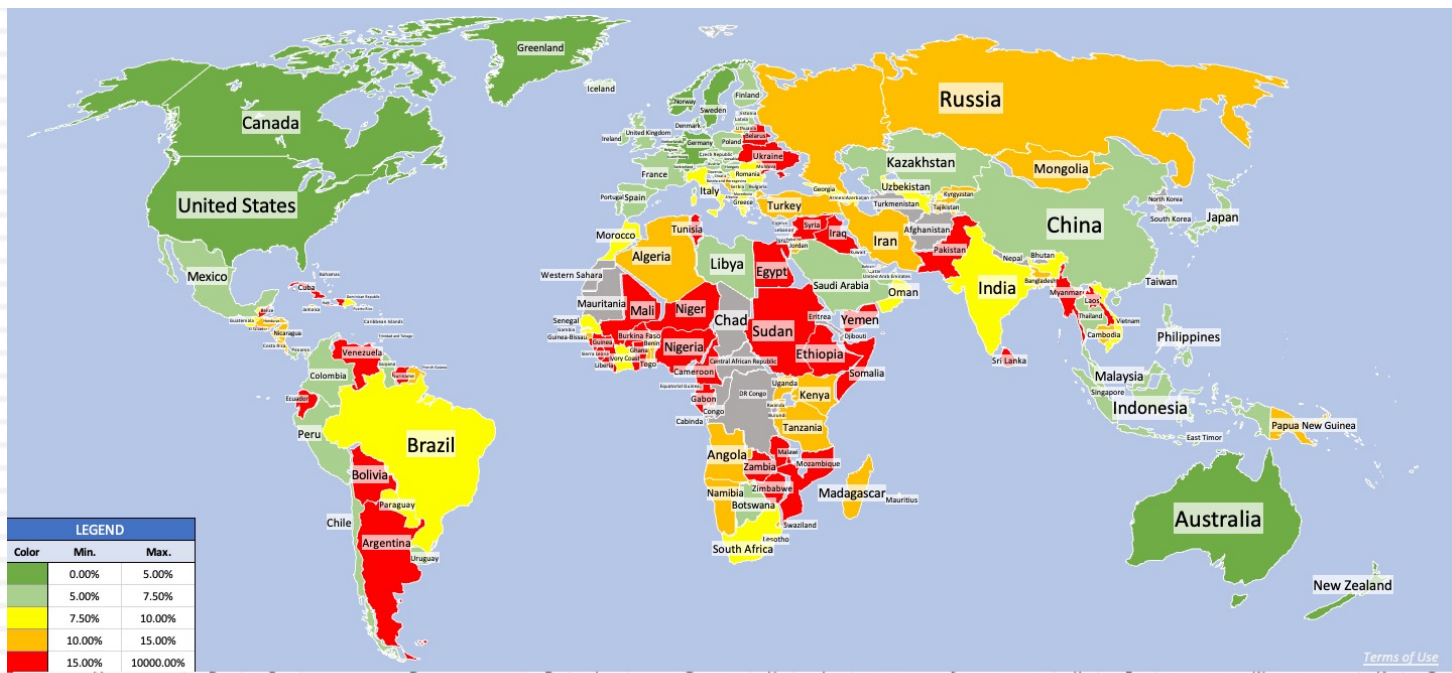
# 3. Risk Differences across Countries

<p><b>Political Structure</b></p> <ul style="list-style-type: none"><li>- The degree of political freedom/democracy affects business risk, but the <u>effects can cut both ways</u> (good and bad).</li><li>- Democracies expose businesses to <u>more continuous risk</u>, as laws and regulations can change, when elections create government changes.</li><li>- Authoritarian regimes often offer the promise of predictability, and less risk on a period-to-period basis, but face <u>more discontinuous risk</u>, since regime change is often violent and significantly disruptive.</li></ul>	<p><b>Corruption</b></p> <ul style="list-style-type: none"><li>- Corruption operates as a <u>hidden tax</u>, reducing profitability and value for private businesses</li><li>- 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 scrupulous.</li></ul>
<p><b>Country Risk</b></p>	
<p><b>War &amp; Violence</b></p> <ul style="list-style-type: none"><li>- Operating a business in a country that is more <u>exposed to violence</u>, from war, terrorism or internal strife, is more difficult than operating that business in a more peaceful environment.</li><li>- Businesses will face higher costs in operations and/or from trying to insure themselves against violence.</li></ul>	<p><b>Legal &amp; Property Rights</b></p> <ul style="list-style-type: none"><li>- The value of a private business is dependent on a legal system that <u>respects property rights and enforces those rights</u>.</li><li>- In a country where there are no or weak property rights or that has a <u>legal system that does not enforce those rights</u>, businesses face more risks and have less value.</li><li>- <u>Timeliness</u> in enforcing legal rights matters as much as the due process, since rights not enforced in a timely manner provide weak protection.</li></ul>

# ERP, by Country: Computational Detail

## ERP Estimation Procedure



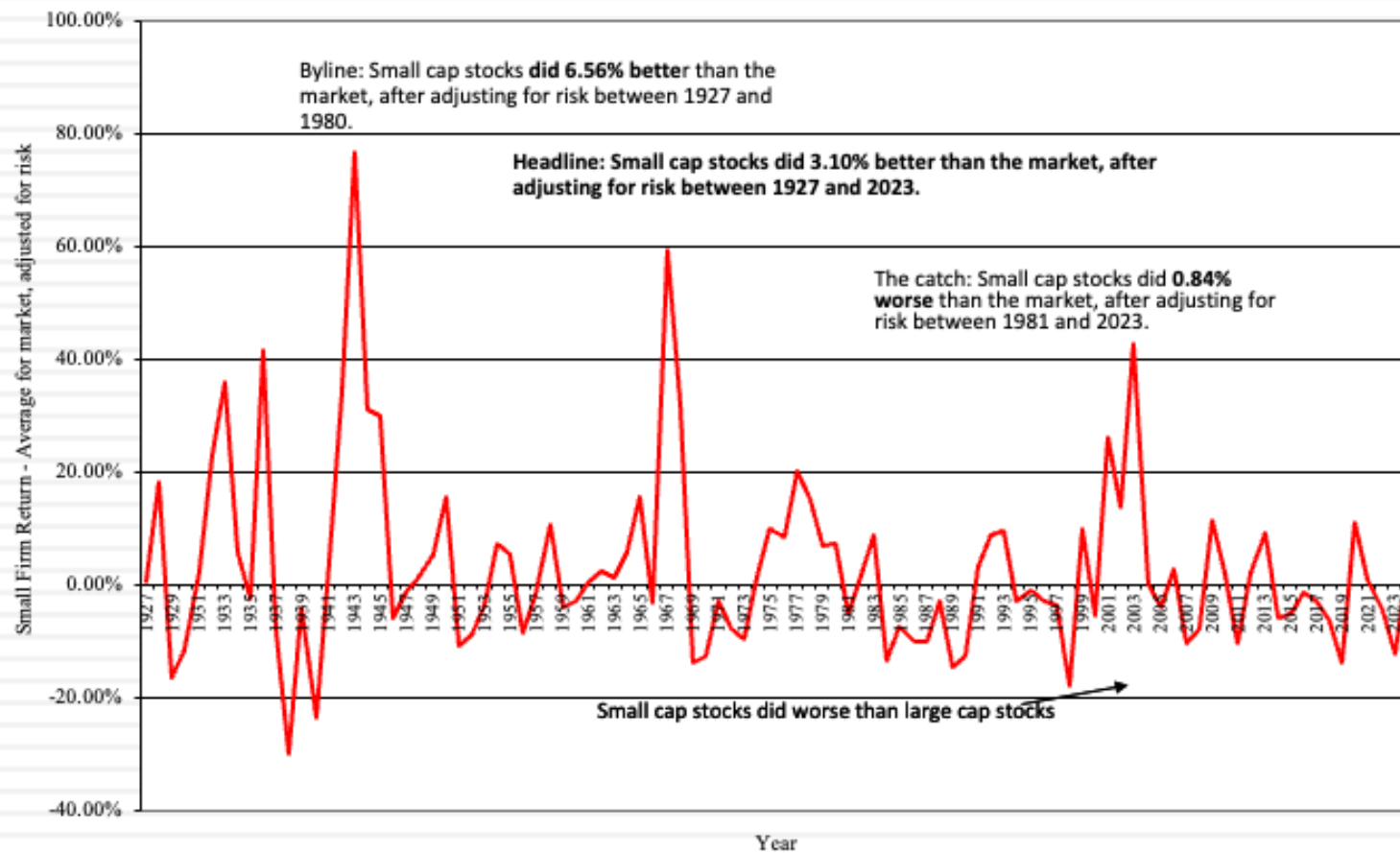


LEGEND		
Color	Min.	Max.
Green	0.00%	5.00%
Yellow	5.00%	7.50%
Orange	7.50%	10.00%
Red	10.00%	15.00%
	15.00%	10000.00%

Country	Rating	ERP	Country	Rating	ERP	Country	Rating	ERP	Country	Rating	ERP	Country	Rating	ERP
Abu Dhabi	Aa2	5.32%	Colombia	Baa2	7.38%	Hungary	Baa2	7.38%	Mexico	Baa2	7.38%	Sierra Leone	NR	19.23%
Albania	B1	11.18%	Congo (Democratic Republic of)	B3	14.11%	Iceland	A2	5.84%	Monaco	NR	5.89%	Singapore	Aa	4.60%
Algeria	NR	11.18%	Congo (Republic of)	Caa2	17.77%	India	Baa3	7.81%	Moldova	B3	14.11%	Slovakia	A2	5.84%
Andorra (Principality of)	Baa2	7.38%	Cook Islands	B1	11.18%	Indonesia	Baa2	7.38%	Mongolia	B3	14.11%	Slovenia	A3	6.35%
Angola	B3	14.11%	Costa Rica	B1	11.18%	Iran	NR	14.11%	Montenegro	B1	11.18%	Solomon Islands	Caa1	15.57%
Anguilla	NR	18.75%	Croatia	Baa2	7.38%	Iraq	Caa1	15.57%	Montserrat	Baa3	7.81%	Somalia	NR	22.15%
Antigua & Barbuda	NR	18.75%	Cuba	Ca	22.15%	Ireland	Aa3	5.48%	Morocco	Ba1	8.26%	South Africa	Ba2	9.00%
Argentina	Ca	22.15%	Curaçao	Baa2	7.38%	Isle of Man	Aa3	5.48%	Mozambique	Caa2	17.77%	South Korea	Aa2	5.32%
Armenia	Ba3	9.86%	Cyprus	Baa2	7.38%	Israel	A1	5.63%	Myanmar	NR	19.23%	Spain	Baa1	6.94%
Aruba	Baa2	7.38%	Czech Republic	Aa3	5.48%	Italy	Baa3	7.81%	Namibia	B1	11.18%	Sri Lanka	Ca	22.15%
Australia	Aaa	4.60%	Denmark	Aaa	4.60%	Ivory Coast	Ba3	9.86%	Netherlands	Aaa	4.60%	St. Maarten	Ba2	9.00%
Austria	Aa1	5.18%	Dominican Republic	Ba3	9.86%	Jamaica	B1	11.18%	Netherlands Antilles	NR	18.75%	St. Vincent & the Grenadines	B3	14.11%
Azerbaijan	Ba1	8.26%	Ecuador	Caa3	19.23%	Japan	A1	5.63%	New Zealand	Aaa	4.60%	Sudan	NR	28.09%
Bahamas	B1	11.18%	Egypt	Caa1	15.57%	Jersey (States of)	Aa3	5.48%	Nicaragua	B3	14.11%	Suriname	Caa3	19.23%
Bahrain	B2	12.64%	El Salvador	Caa3	19.23%	Jordan	B1	11.18%	Niger	Caa2	17.77%	Swaziland	B3	14.11%
Bangladesh	B1	11.18%	Estonia	A1	5.63%	Kazakhstan	Baa2	7.38%	Nigeria	Caa1	15.57%	Sweden	Aaa	4.60%
Barbados	B3	14.11%	Ethiopia	Caa2	17.77%	Kenya	B3	14.11%	Norway	Aaa	4.60%	Switzerland	Aaa	4.60%
Belarus	C	28.09%	Falkland Islands	NR	10.36%	Korea, D.P.R.	NR	28.09%	Oman	Ba1	8.26%	Syria	NR	28.09%
Belgium	Aa3	5.48%	Fiji	B1	11.18%	Kuwait	A1	5.63%	Pakistan	Caa3	19.23%	Taiwan	Aa3	5.48%
Belize	Caa2	17.77%	Finland	Aa1	5.18%	Kyrgyzstan	B3	14.11%	Palestinian Authority	NR	6.76%	Tajikistan	B3	14.11%
Benin	B1	11.18%	France	Aa2	5.32%	Laos	Caa3	19.23%	Panama	Baa2	7.38%	Tanzania	B2	12.64%
Bermuda	A2	5.84%	French Guiana	NR	10.36%	Latvia	A3	6.35%	Papua New Guinea	B2	12.64%	Thailand	Baa1	6.94%
Bolivia	Caa1	15.57%	Gabon	Caa1	15.57%	Lebanon	C	28.09%	Paraguay	Ba1	8.26%	Togo	B3	14.11%
Bosnia and Herzegovina	B3	14.11%	Gambia	NR	11.18%	Liberia	NR	22.15%	Peru	Baa1	6.94%	Trinidad & Tobago	Ba2	9.00%
Botswana	A3	6.35%	Georgia	Ba2	9.00%	Libya	NR	7.38%	Philippines	Caa2	7.38%	Tunisia	Caa2	17.77%
Brazil	Ba2	9.00%	Germany	Aaa	4.60%	Liechtenstein	Aaa	4.60%	Poland	A2	5.84%	Turkey	B3	14.11%
British Virgin Islands	Ba2	9.00%	Ghana	Caa3	19.23%	Lithuania	A2	5.84%	Portugal	A3	6.35%	Turks & Caicos Islands	Baa1	6.94%
Brunei	NR	5.48%	Gibraltar	NR	5.89%	Luxembourg	Aaa	4.60%	Qatar	Aa3	5.48%	Uganda	B2	12.64%
Bulgaria	Baa1	6.94%	Greece	Ba1	8.26%	Macau	Aa3	5.48%	Ras Al Khaimah (Emirate of)	A3	6.35%	Ukraine	Ca	22.15%
Burkina Faso	Caa1	15.57%	Greenland	NR	Aa2	Macedonia	Ba3	9.86%	Reunion	NR	6.28%	United Arab Emirates	Aa2	5.32%
Cambodia	B2	12.64%	Guatemala	Ba1	8.26%	Madagascar	NR	14.11%	Romania	Baa3	7.81%	United Kingdom	Aa3	5.48%
Cameroon	Caa1	15.57%	Guernsey (States of)	A1	5.63%	Malawi	NR	22.15%	Russia	NR	11.18%	United States	Aaa	4.60%
Canada	Aaa	4.60%	Guinea	NR	17.77%	Malaysia	A3	6.35%	Rwanda	B2	12.64%	Uruguay	Baa2	7.38%
Cape Verde	B3	14.11%	Guinea-Bissau	NR	12.64%	Maldives	Caa1	15.57%	Saint Lucia	NR	18.75%	Uzbekistan	Ba3	9.86%
Cayman Islands	Aa3	5.48%	Guyana	NR	6.94%	Mali	Caa2	17.77%	Saudi Arabia	A1	5.63%	Venezuela	C	28.09%
Channel Islands	NR	5.89%	Haiti	NR	19.23%	Malta	A2	5.84%	Senegal	Ba3	9.86%	Vietnam	Ba2	9.00%
Chile	A2	5.84%	Honduras	B1	11.18%	Martinique	NR	0.00%	Serbia	Ba2	9.00%	Yemen	NR	19.23%
China	A1	5.63%	Hong Kong	Aa3	5.48%	Mauritius	Baa3	7.81%	Sharjah	Ba1	8.26%	Zambia	Caa3	19.23%
												Zimbabwe	NR	17.77%

# 4. The Garnishes – A small cap premium?

*Small Firm Premium over time- 1927 -2023*



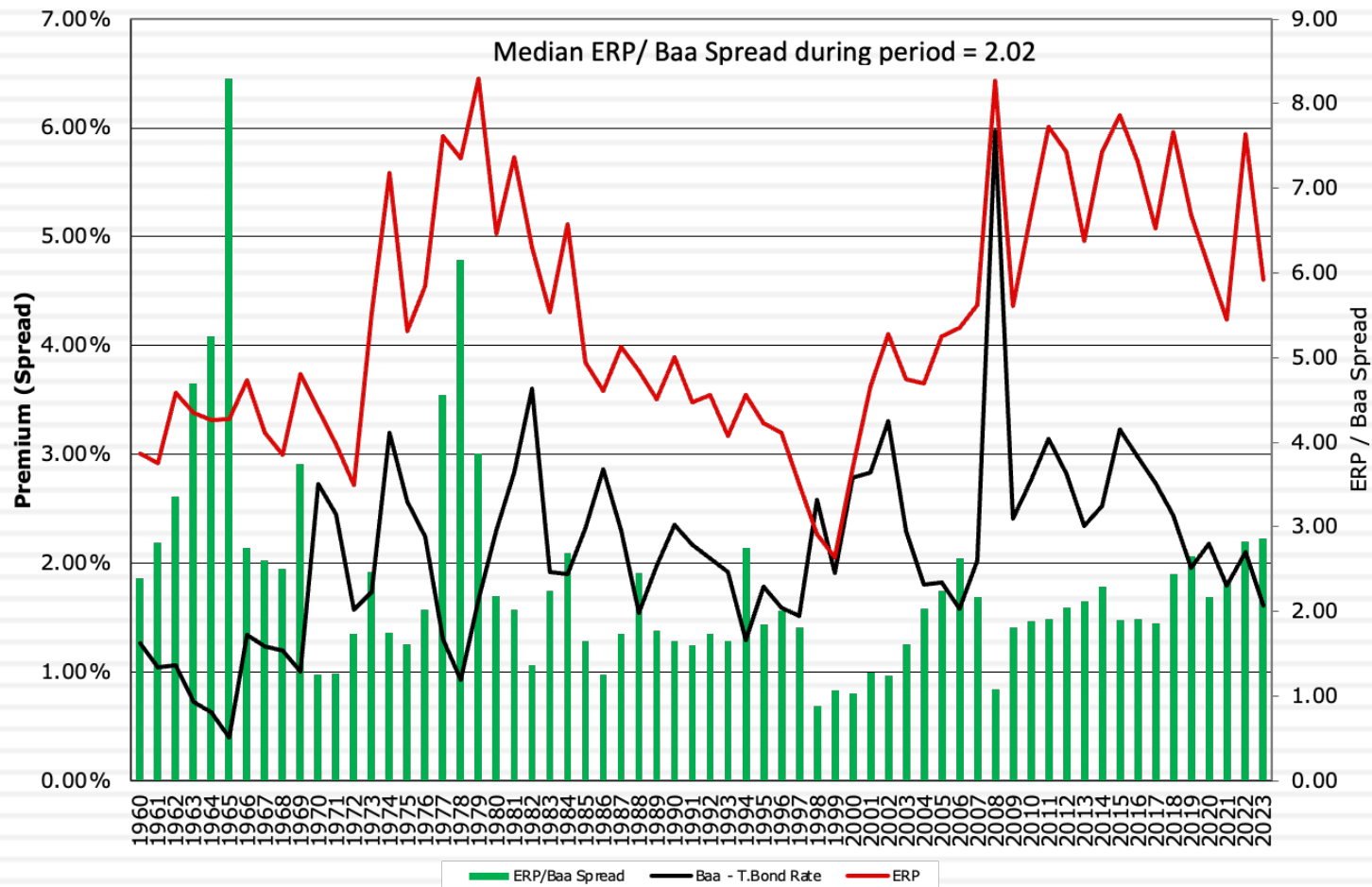


# And worse: A Company-specific risk premium? Really?

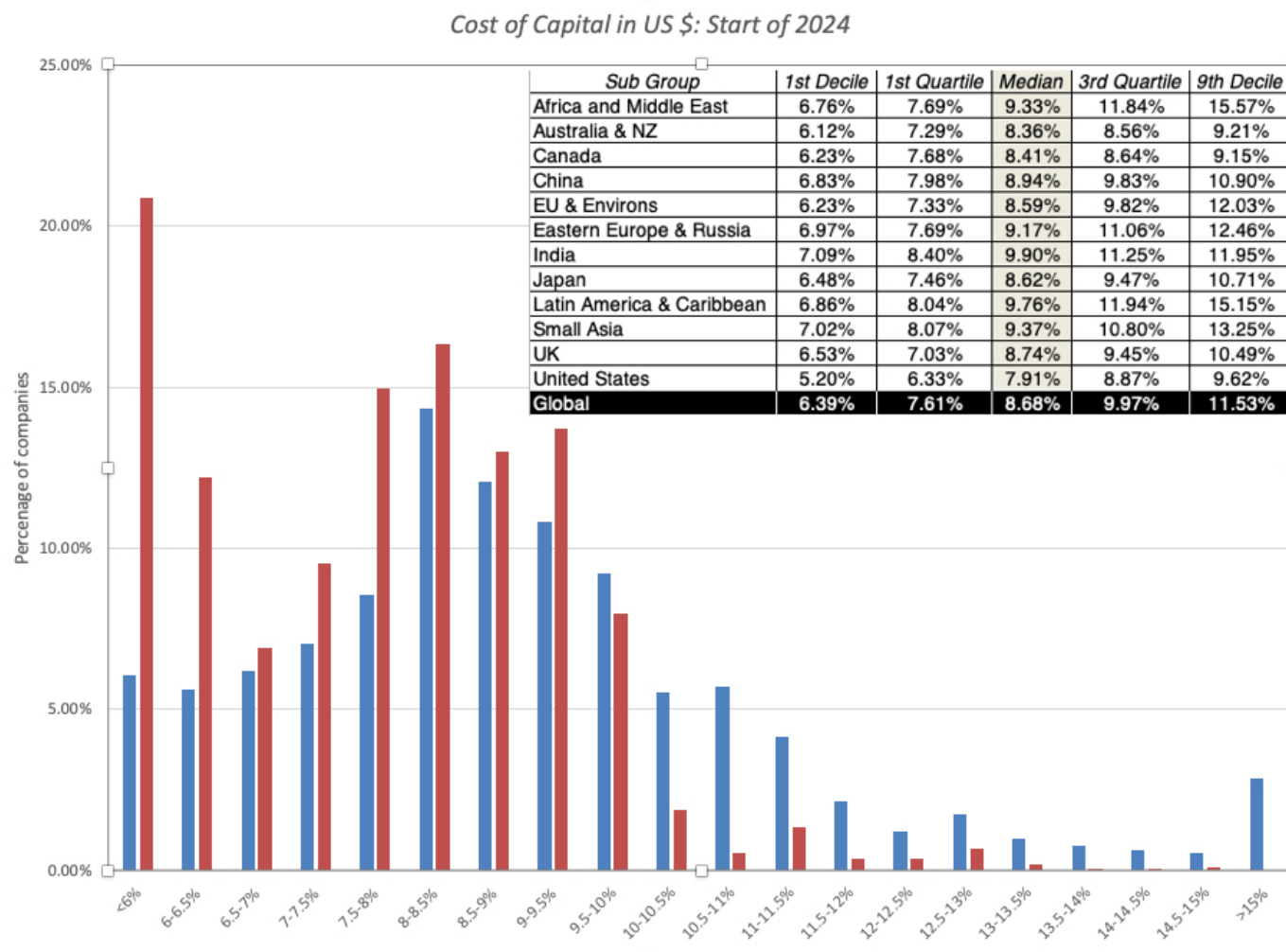
- This is the practice of adding up a completely made-up number to the discount rate to capture risks that you claim are not captured already in it.
- When confronted with why, practitioners come up with a whole host of reasons, and every one of them fails under scrutiny:
  - ▣ Key person exposure (a cash flow effect, not a discount rate effect)
  - ▣ Not liquid (a misunderstanding of liquidity's effects and double counting)
- The bottom line is that this added premium is not only completely arbitrary but opens the door to valuation's biggest enemy (bias).

# 4. Dynamic default spreads

Equity Risk Premiums and Bond Default Spreads

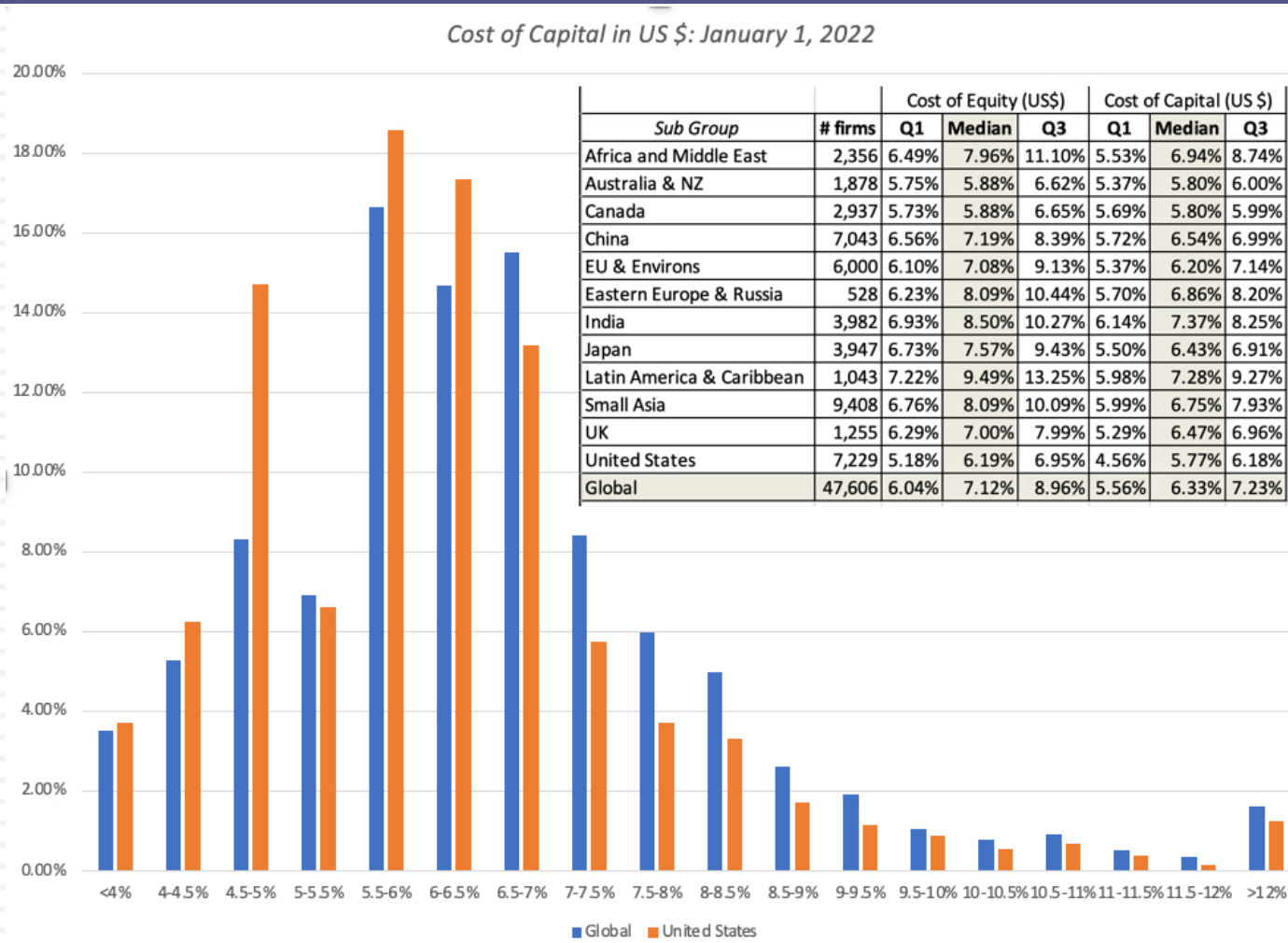


# Cost of Capital – Differences across firms (in January 2024)





# And differences across time: Cost of Capital in 2022



# Summing up...

- Less is more: In valuation, we spend way too much time finessing and adjusting the cost of capital. The spread in the cost of capital is too small for this to be worth it.
- And live in the world you are in: It is a given that things will change over the course of the year. Rephrasing an old saying, the only constant in markets is that they will change. The notion that you can keep using a cost of capital you have been using in the practice, and using defenses like normalization to justify doing so, is valuation malpractice.



# TOO BIG A RISK? CATASTROPHE RISK IN INVESTING AND BUSINESS

The Armageddon Effect on Stock Prices!

# The Lead In...

- In the context of valuing companies, and sharing those valuations, I do get suggestions from around the world from readers of my posts on companies that I should value next.
  - While much of the time, do not end up valuing those suggested a company, a reader from Iceland made a suggestion on a company to value that I found intriguing. He suggested that I value Blue Lagoon, a legendary Icelandic Spa with a long history of profitability that was finding its existence under threat, as a [result of volcanic activity](#) in Southwest Iceland.
  - In another story that made the rounds in recent weeks, 23andMe, a genetics testing company that offers its customers genetic and health information, based upon saliva sample, found itself facing the brink, after a hacker claimed to have [hacked the site](#) and accessed the genetic information of millions of its customers.
  - Stepping back, one claim that climate change advocates have made not just about fossil fuel companies, but about all businesses, is that [investors are underestimating the effects that climate change](#) will have on economic systems and on value. These are three very different stories, but what they share in common is a fear, imminent or expected, of a catastrophic event that may put a company's business at risk.

# Catastrophic Risk: Differentiating Factors

1. Source: *Natural disasters can still be a major factor* determining the success or failure of businesses. *Human beings add to nature's catastrophes* with wars and terrorism wreaking havoc not just on human lives, but also on businesses that are in their crosshairs. In some cases, a *change in regulatory or tax law* can put the business model for a company or many company at risk.
2. Locus of Damage: Some catastrophes created *limited damage*, perhaps isolated to a single business, but others can create damage that extends *across geographies or an entire sector*.
3. Likelihood: There is a third dimension on which catastrophic risks can vary, and that is in terms of *likelihood of occurrence*. Most catastrophic risks are low-probability events, but those low probabilities can become high likelihood events.

# Cat Risk: Value Implications

- Much as we like to dress up intrinsic value with the presence of models and inputs, the truth is that intrinsic valuation at its core is built around a simple proposition: the value of an asset or business is the present value of the expected cash flows on it:

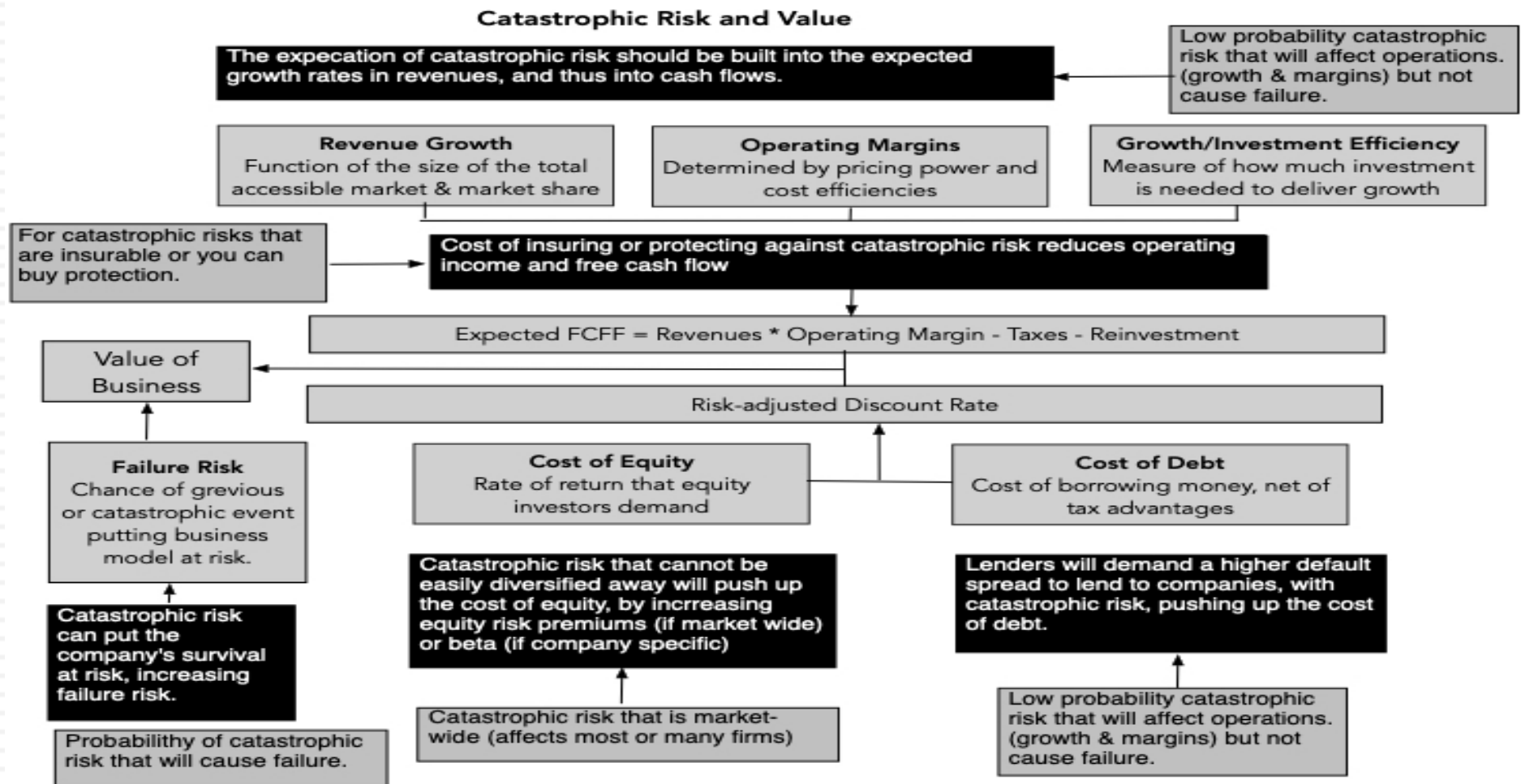
$$\text{Value} = \frac{E(CF_1)}{(1+r)^1} + \frac{E(CF_2)}{(1+r)^2} + \dots + \frac{E(CF_n)}{(1+r)^n}$$

Expected cash flows over life (n) of asset

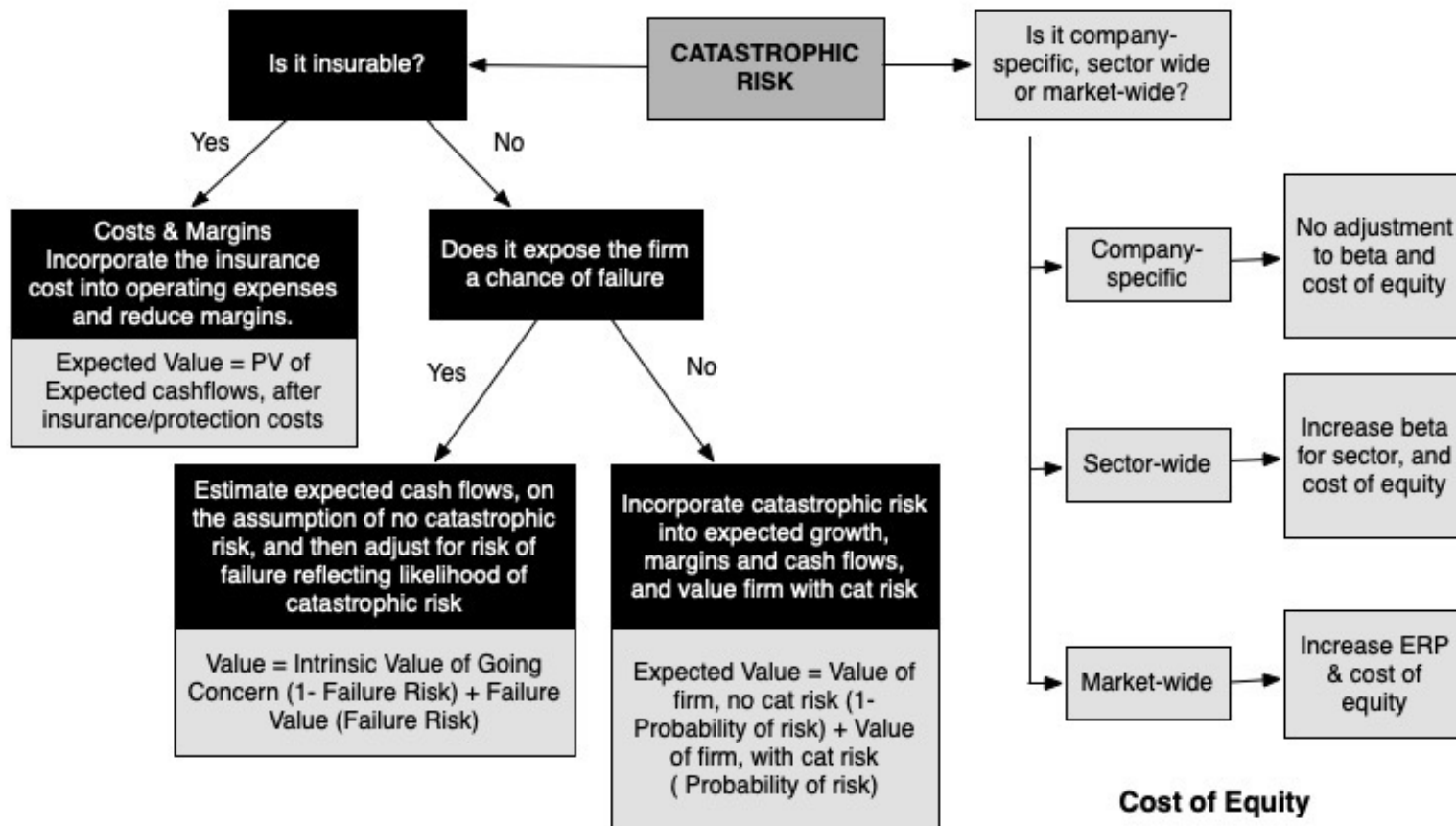
Risk-adjusted discount rate

- That equation gives rise to what I term the "It Proposition", which is that for "it" to have value, "it" has to affect either the expected cashflows or the risk of an asset or business.

# Cat Risk and Intrinsic Value



# Deconstructing Cat Risk



**Cash Flows, Failure Risk and Cost of Debt**



# 1. Insurable Risk

- Intrinsic Value Effect: If you bring in the insurance cost into your expenses, lowering income and cash flows, and let the valuation play out.
  - Pluses: Simplicity and specificity, because all this approach needs is a line item in the income statement (which will either exist already, if the company is buying insurance, or can be estimated).
  - Minuses: You may not be able to insure against some risks, either because they are uncommon (and insurance company actuaries are unable to estimate probabilities well enough, to set premiums) or imminent (and the likelihood of the event happening is so high, that the premiums become unaffordable). The insurance may not always be complete protection.
- Applications: When valuing many businesses in developed markets, we tend to assume that these businesses have insured themselves against many catastrophic risks and ignore them in valuation consequently.

## 2. Uninsurable, Going Concern, Company-specific

- Intrinsic value effect: Do two going-concern valuations, one with the assumption that there is no catastrophe and one without, and then attaching a probability to the catastrophic event occurring.

*Expected Value with Catastrophe = Value without Catastrophe (1 – Probability of Catastrophe) + Value with Catastrophe (Probability of Catastrophe)*

- Pluses: By separating the catastrophic risk scenario from the rest of the possible and more benign outcomes will help make the problem more tractable, since trying to adjust expected cash flows and discount rates for widely divergent outcomes is difficult to do.
- Minuses: Estimating the probability of the catastrophe may require specific skills that you do not have, but using expert advice can help
- Applications: I used it in my post on valuing key persons in businesses, or the loss of a big contract for a small company, where that contract accounts for a significant portion of total revenues. It can also be used to value a company whose business models is built upon the presence or absence of a regulation or law, in which case a change in that regulation or law can change value.

# 3. Uninsurable, Failure-triggering, Company-specific

- Intrinsic Value Effect: If the catastrophic risk is not insurable, but the business will not survive, if the risk unfolds, the approach parallels the previous one, with the difference being that the value of the business, in case it fails, replaces the intrinsic valuation, with catastrophic risk built in:

*Expected Value with Catastrophe = Value without Catastrophe (1 – Probability of Catastrophe) + Failure Value (Probability of Catastrophe)*

- Pluses: As with the previous approach, separating the going concern from the failure values can help in the estimation process. Trying to estimate cash flows, growth rates and cost of capital for a company across both scenarios (going concern and failure) is difficult to do, and it is easy to double count risk or miscount it.
- Minuses: As in the last approach, you still have to estimate a probability that a catastrophe will occur, and in addition, and there can be challenges in estimating the value of a business, and its equity, if the company fails in the face of catastrophic risk.
- Applications: This is the approach that I use to value highly levered., cyclical companies, that can deliver solid operating and equity values in periods where they operate as going concerns, but face distress or bankruptcy, in the face of a severe recession.

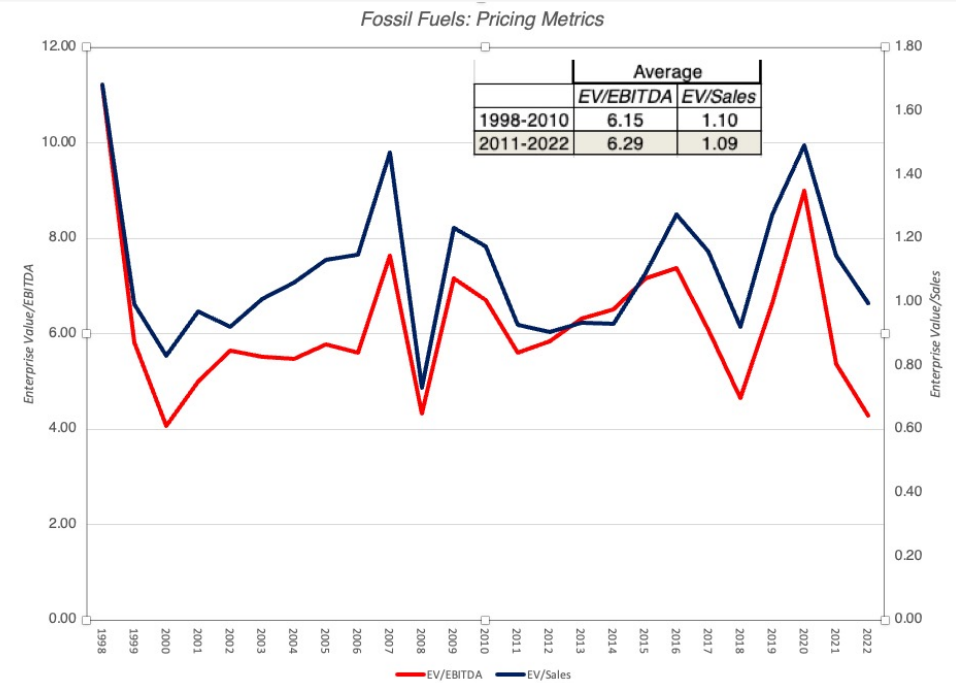
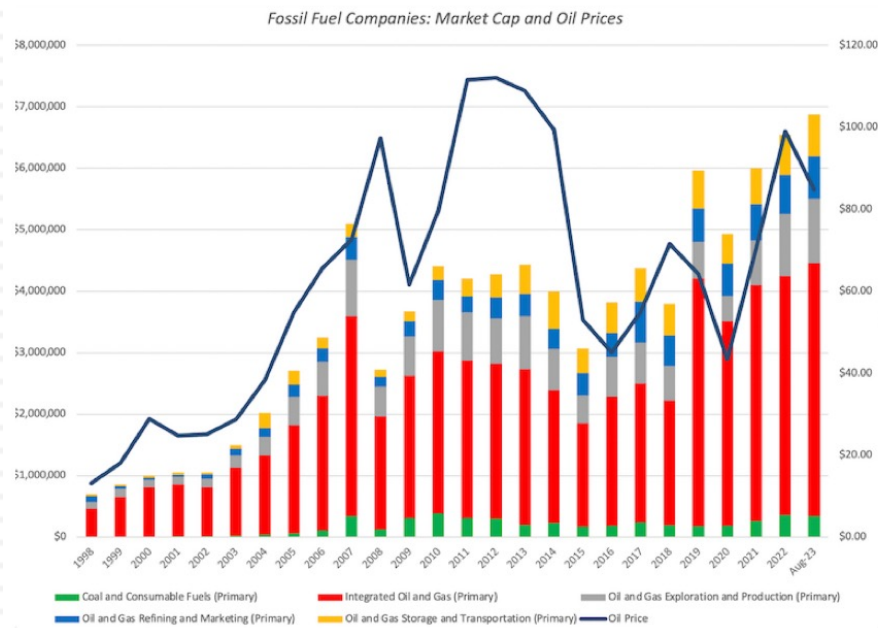
# Cat Risk and Pricing

- The intrinsic value approach assumes that we, as business owners and investors, look at catastrophic risk rationally, and make our assessments based upon how it will play out in cashflows, growth and risk. In truth, is worth remembering key insights from psychology, on how we, as human beings, deal with threats (financial and physical) that we view as existential.
  - The first response is denial, an unwillingness to think about catastrophic risks. As someone who lives in a home close to one of California's many earthquake faults, and two blocks from the Pacific, I can attest to this response, and offer the defense that in its absence, you would wither away from anxiety and fear.
  - The second is panic, when the catastrophic risk becomes imminent, where the response is to flee, leaving much of what you have behind.
- When looking at how the market prices in the expectation of a catastrophe occurring and its consequences, both these human emotions play out, as the overpricing of businesses that face catastrophic risk, when it is low probability and distant, and the underpricing of these same businesses when catastrophic risk looms large.

# 1. The COVID Effect on Sectors

Industry	Worst Performing Industries: 2/14- 3/27						
	Market Cap (2/14/20)	Market Cap (3/20/20)	Market Cap (3/27/20)	3/20-3/27		2/14 - 3/27	
				\$ Change	% Change	\$ Change	% Change
Oil/Gas (Production and Exploration)	\$ 692,337	\$ 318,467	\$ 342,645	\$ 24,178	7.59%	\$[349,692]	-50.51%
Oil/Gas Distribution	\$ 653,558	\$ 361,359	\$ 375,362	\$ 14,003	3.88%	\$[278,196]	-42.57%
Hotel/Gaming	\$ 717,026	\$ 397,218	\$ 430,694	\$ 33,476	8.43%	\$[286,332]	-39.93%
Oilfield Svcs/Equip.	\$ 743,252	\$ 419,308	\$ 447,056	\$ 27,748	6.62%	\$[296,195]	-39.85%
Homebuilding	\$ 247,355	\$ 127,623	\$ 150,684	\$ 23,060	18.07%	\$ [96,671]	-39.08%
Air Transport	\$ 559,010	\$ 316,420	\$ 341,572	\$ 25,153	7.95%	\$[217,438]	-38.90%
Broadcasting	\$ 164,676	\$ 94,207	\$ 100,672	\$ 6,465	6.86%	\$ [64,004]	-38.87%
Reinsurance	\$ 180,565	\$ 98,214	\$ 114,858	\$ 16,644	16.95%	\$ [65,706]	-36.39%
Aerospace/Defense	\$1,280,583	\$ 708,411	\$ 844,062	\$135,651	19.15%	\$[436,521]	-34.09%
Food Wholesalers	\$ 93,312	\$ 50,262	\$ 61,765	\$ 11,503	22.89%	\$ [31,547]	-33.81%
Industry	Best Performing Industries: 2/14- 3/27						
	Market Cap (2/14/20)	Market Cap (3/20/20)	Market Cap (3/27/20)	\$ Change	% Change	\$ Change	% Change
Food Processing	\$1,794,078	\$1,508,894	\$1,586,790	\$ 77,896	5.16%	\$[207,288]	-11.55%
Household Products	\$1,463,387	\$1,196,683	\$1,269,125	\$ 72,441	6.05%	\$[194,263]	-13.27%
Drugs (Biotechnology)	\$1,414,870	\$1,145,721	\$1,225,453	\$ 79,733	6.96%	\$[189,417]	-13.39%
Retail (Grocery and Food)	\$ 479,895	\$ 398,124	\$ 415,280	\$ 17,157	4.31%	\$ [64,615]	-13.46%
Telecom (Wireless)	\$1,084,938	\$ 856,771	\$ 928,767	\$ 71,996	8.40%	\$[156,171]	-14.39%
Retail (Online)	\$2,458,187	\$1,992,079	\$2,099,013	\$106,933	5.37%	\$[359,174]	-14.61%
Telecom. Equipment	\$ 554,013	\$ 452,441	\$ 472,017	\$ 19,576	4.33%	\$ [81,996]	-14.80%
Drugs (Pharmaceutical)	\$3,630,720	\$2,895,935	\$3,093,246	\$197,310	6.81%	\$[537,474]	-14.80%
Coal & Related Energy	\$ 167,718	\$ 139,035	\$ 142,580	\$ 3,545	2.55%	\$ [25,138]	-14.99%
Utility (Water)	\$ 144,293	\$ 113,037	\$ 122,329	\$ 9,292	8.22%	\$ [21,964]	-15.22%

# 2. The Fossil Fuel Test

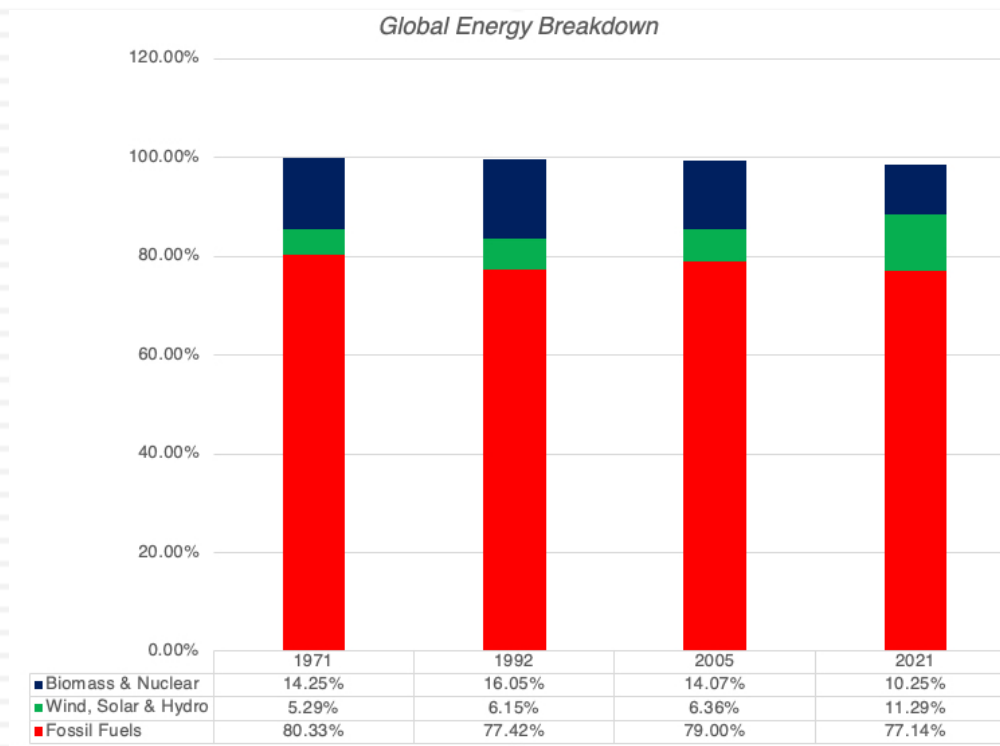


# Is the climate change punch fading?

- While fossil fuel pricing multiples have gone up and down, I have computed the average on both in the 2000-2010 period and again in the 2011-2023 period.
- If the latter period is the one of enlightenment, at least on climate change, with warnings of climate change accompanied by trillions of dollars invested in combating it, it is striking how little impact it has had on how markets, and investors in the aggregate, view fossil fuel companies.
- In fact, there is evidence that the effect of being labeled climate change's biggest villains is fading over time, as fossil fuel companies have not only seen a comeback in stock prices, but have also been more open about their plans to expand in fossil fuels.



# Is this why?





# What next?

- It is possible, perhaps even likely, that investors are not pricing in climate change not just in fossil fuel stocks, but across the board, when they price assets.
  - Should buyers be paying hundreds of millions of dollars for a Manhattan office building, when all of New York may be underwater in a few decades?
  - Lest I be accused of pointing fingers, what will happen to the value of my house that is currently two blocks from the beach, but may be in the ocean in a few decades?
- The painful truth is that if doomsday events (nuclear war, mega asteroid hitting the earth, the earth getting too hot for human existence) manifest, it is survival that becomes front and center, not having a healthy portfolio. Thus, ignoring Armageddon scenarios when valuing businesses and assets may be completely rational, and taking investors to task for not pricing assets correctly will do little to alter their trajectory!