DATA UPDATE 6 FOR 2023: THE UPSIDE AND DOWNSIDE OF DEBT

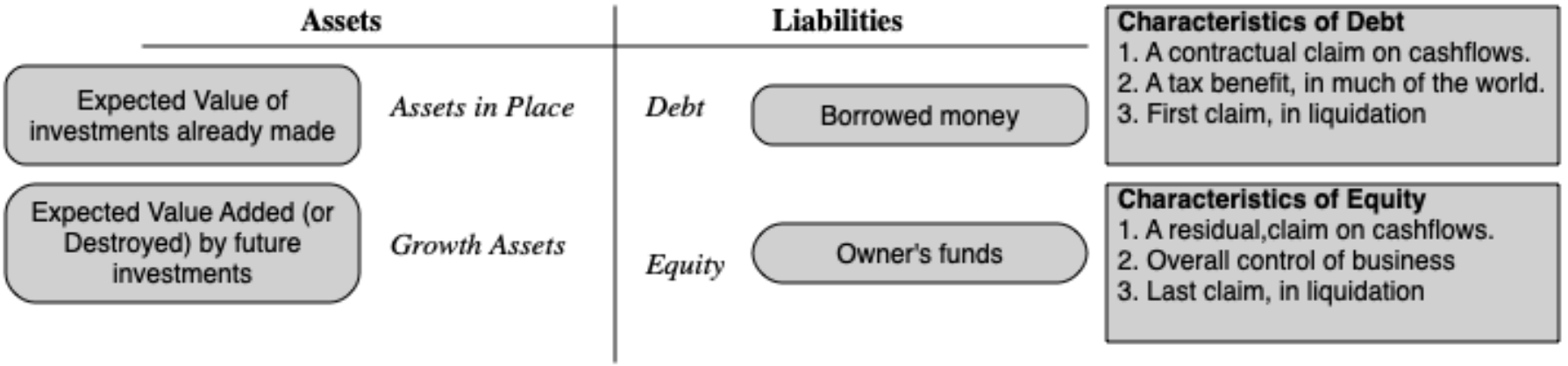
A double-edged sword!

To borrow, or not to borrow?

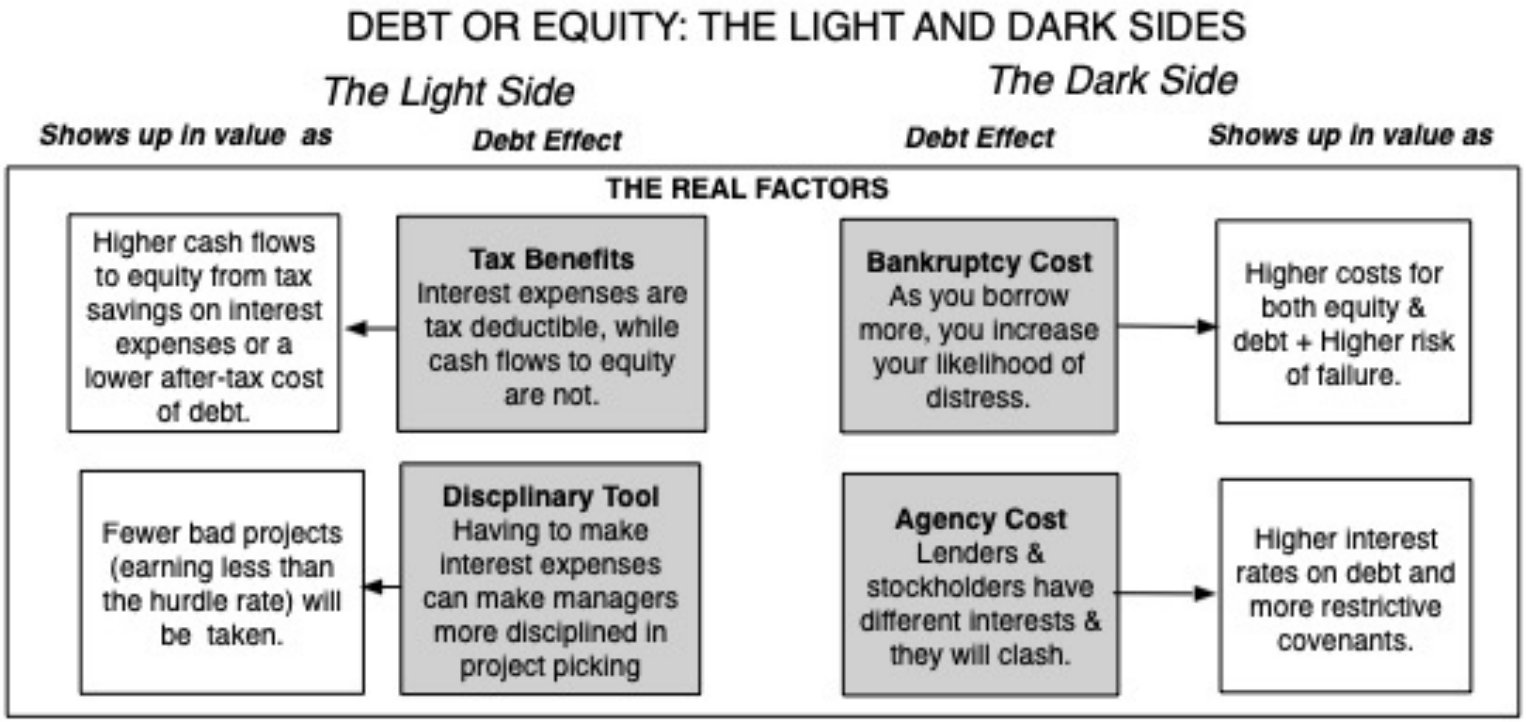
- As investors, businesses and let's face it, as human beings, we have a prickly relationship with debt.
  - While it is a financial decision, it is one that has been assigned moral overtones, since almost every religion has inveighed against debt's sins, labeling those who lend as sinners and those who borrow as weak.
  - All that said, businesses around the world have borrowed money though time to fund their operations, sometimes for good reasons and sometimes for bad, and over time, these businesses have also had cycles of too much debt leading to painful cleansing.
- In this post, I will focus on corporate debt in 2023, keeping in mind that it was a year where the rules seemed to change, as interest rates rose to pre-2008 levels, and putting at risk those firms that had borrowed to the hilt, at low interest rates, but without the earnings capacity to service the higher interest payments, with 2022 rates.

Debt's Place in Business

Debt in a Financial Balance Sheet



Good Reasons for borrowing



Illusory Reasons for Borrowing

Debt versus Equity: The Illusory Benefits

THE ILLUSORY FACTORS

ROE will generally increase as you borrow money, but so will your cost of equity.

Higher ROE
Using more debt in funding investments will increase ROE.

Lower Net Income
As you borrow, the resulting interest expenses will lower net income.

Net income will be lower, but you will also have less equity invested iin the business.

As you borrow money, you are replacing more expensive equity with cheaper debt, but increasing the costs of both.

Cheaper Debt
Since the cost of debt is lower than the cost of equity, using more debt will lower your cost of capital.

Lower Ratings
Borrowing will lower bond ratings & increase cost of debt.

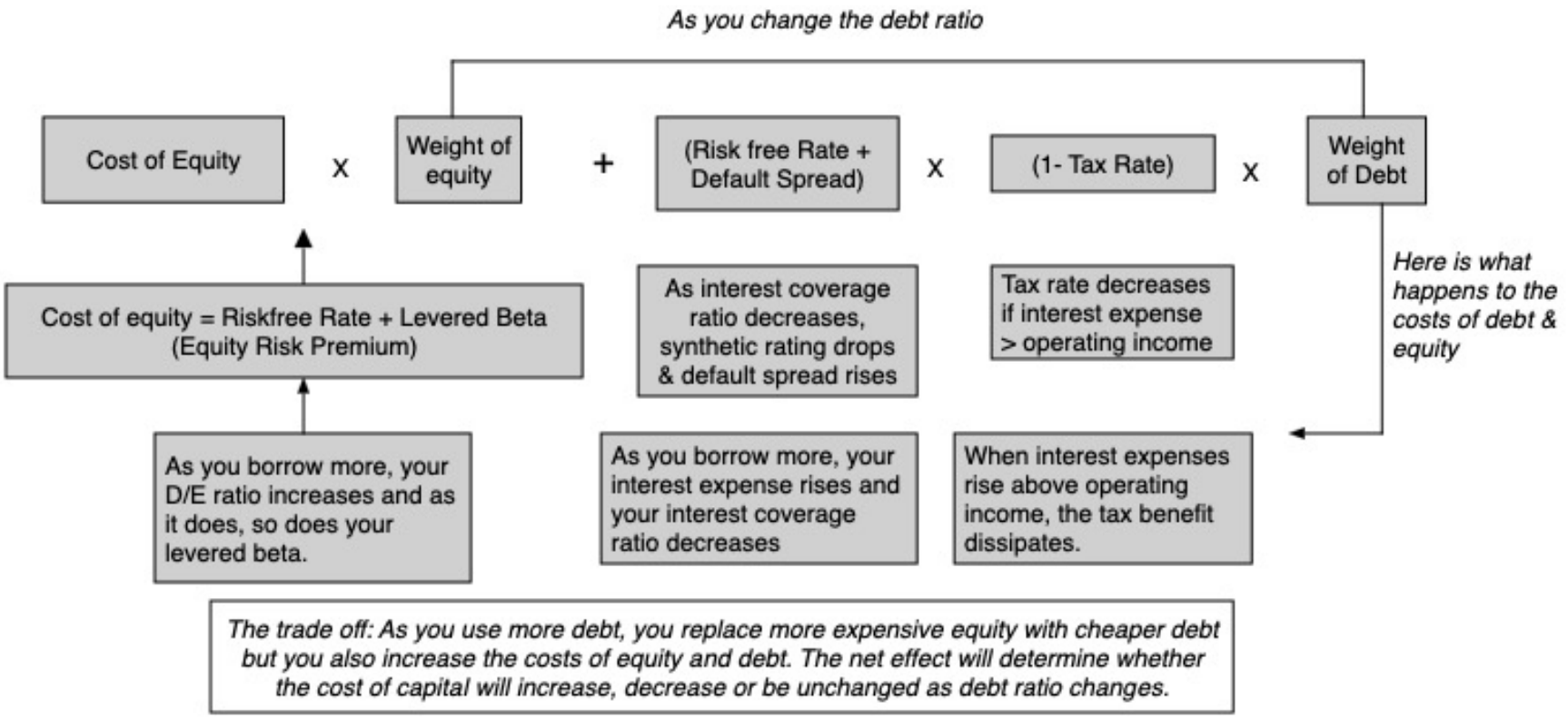
Your cost of debt rises as you borrow more, but it will still be replacing more expensive equity.

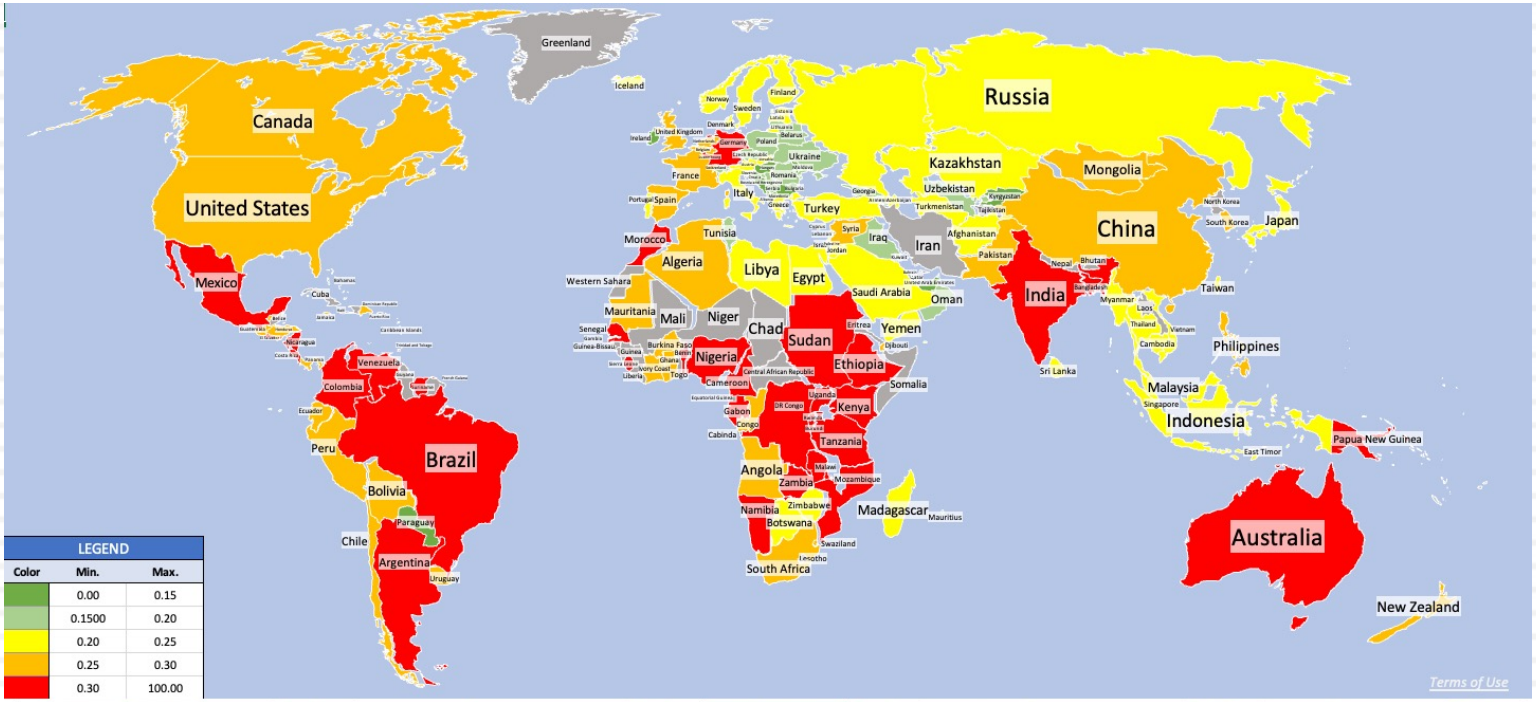
THE TRANSIENT FACTORS

To the extent that your equity is mipriced or your debt carries the wrong interest rate, market frictions can affect your debt/equity mix, in either direction:

- If equity is over priced and debt carries too high an interest rate, you will use more equity & less debt
- If equity is under priced and debt carries too low an interest rate, you will use more debt & less equity.

The Right Financing Mix





LEGEND		
Color	Min.	Max.
	0.00	0.15
	0.1500	0.20
	0.20	0.25
	0.25	0.30
	0.30	100.00

Country	Tax Rate	Country	Tax Rate	Country	Tax Rate	Country	Tax Rate	Country	Tax Rate
Afghanistan	20.00%	China	25.00%	India	30.00%	Montenegro	15.00%	Slovenia	19.00%
Albania	15.00%	Colombia	35.00%	Indonesia	22.00%	Morocco	31.00%	Solomon Islands	30.00%
Algeria	26.00%	Congo	28.00%	Iraq	15.00%	Mozambique	32.00%	South Africa	27.00%
Andorra	10.00%	Congo (Democratic Republic of the)	30.00%	Ireland	12.50%	Myanmar	22.00%	Spain	25.00%
Angola	25.00%	Costa Rica	30.00%	Isle of Man	0.00%	Namibia	32.00%	Sri Lanka	24.00%
Anguilla	0.00%	Croatia	18.00%	Israel	23.00%	Netherlands	25.80%	St Maarten	35.00%
Antigua and Barbuda	25.00%	Curacao	22.00%	Italy	24.00%	New Zealand	28.00%	Sudan	35.00%
Argentina	35.00%	Cyprus	12.50%	Ivory Coast	25.00%	Nicaragua	30.00%	Suriname	36.00%
Armenia	18.00%	Czech Republic	19.00%	Jamaica	25.00%	Nigeria	30.00%	Swaziland	27.50%
Aruba	25.00%	Denmark	22.00%	Japan	23.20%	Norway	22.00%	Sweden	20.60%
Australia	30.00%	Djibouti	25.00%	Jersey	0.00%	Oman	15.00%	Switzerland	18.00%
Austria	24.00%	Dominica	25.00%	Jordan	20.00%	Pakistan	29.00%	Syria	28.00%
Azerbaijan	20.00%	Dominican Republic	27.00%	Kazakhstan	20.00%	Palestinian Territory	15.00%	Taiwan	20.00%
Bahamas	0.00%	Ecuador	25.00%	Kenya	30.00%	Panama	25.00%	Tanzania	30.00%
Bahrain	0.00%	Egypt	22.50%	Korea, Republic of	25.00%	Papua New Guinea	30.00%	Thailand	20.00%
Bangladesh	32.50%	El Salvador	30.00%	Kuwait	15.00%	Paraguay	10.00%	Trinidad and Tobago	30.00%
Barbados	5.50%	Estonia	20.00%	Kyrgyzstan	10.00%	Peru	29.50%	Tunisia	15.00%
Belarus	18.00%	Ethiopia	30.00%	Latvia	20.00%	Philippines	25.00%	Turkey	23.00%
Belgium	25.00%	Fiji	20.00%	Lebanon	17.00%	Poland	19.00%	Turkmenistan	20.00%
Benin	30.00%	Finland	20.00%	Libya	24.00%	Portugal	21.00%	Turks and Caicos Islands	0.00%
Bermuda	0.00%	France	25.00%	Liechtenstein	12.50%	Qatar	10.00%	Uganda	30.00%
Bolivia	25.00%	Gabon	30.00%	Lithuania	15.00%	Romania	16.00%	Ukraine	18.00%
Bonaire, Saint Eustatius and Saba	25.00%	Gambia	27.00%	Luxembourg	24.94%	Russia	20.00%	United Arab Emirates	0.00%
Bosnia and Herzegovina	10.00%	Georgia	15.00%	Macau	12.00%	Rwanda	30.00%	United Kingdom	25.00%
Botswana	22.00%	Germany	30.00%	Macedonia	10.00%	Saint Kitts and Nevis	33.00%	United States	25.00%
Brazil	34.00%	Ghana	25.00%	Madagascar	20.00%	Saint Lucia	30.00%	Uruguay	25.00%
Brunei Darussalam	18.50%	Gibraltar	10.00%	Malawi	30.00%	Saint Vincent and the Grenadines	30.00%	Uzbekistan	15.00%
Bulgaria	10.00%	Greece	22.00%	Malaysia	24.00%	Samoa	27.00%	Vanuatu	0.00%
Burkina Faso	28.00%	Grenada	28.00%	Malta	35.00%	Saudi Arabia	20.00%	Venezuela	34.00%
Burundi	30.00%	Guatemala	25.00%	Mauritania	25.00%	Senegal	30.00%	Vietnam	20.00%
Cambodia	20.00%	Guernsey	0.00%	Mauritius	15.00%	Serbia	15.00%	Yemen	20.00%
Cameroon	33.00%	Honduras	25.00%	Mexico	30.00%	Sierra Leone	30.00%	Zambia	35.00%
Canada	25.00%	Hong Kong SAR	16.50%	Moldova	12.00%	Singapore	17.00%	Zimbabwe	24.72%
Cayman Islands	0.00%	Hungary	9.00%	Monaco	33.00%	Sint Maarten (Dutch part)	35.00%		
Chile	27.00%	Iceland	20.00%	Mongolia	25.00%	Slovakia	21.00%		

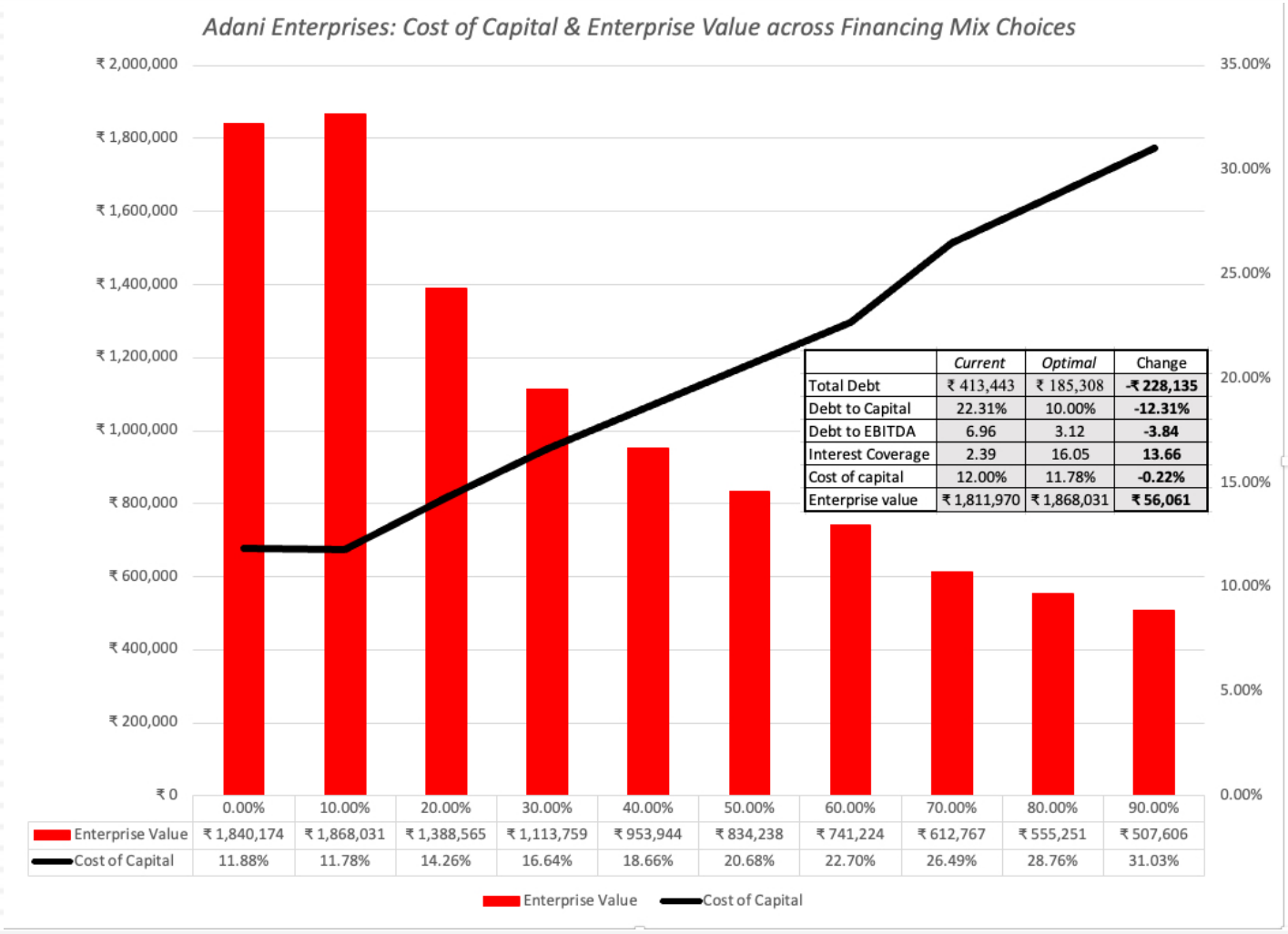
Effect on Value

- If you can see the mechanics of how changing debt ratio changes the cost of capital, but are unclear on how lowering the cost of capital changes the value of a business, the link is a simple one.

$$Value\ of\ firm = \frac{E(FCFF_1)}{(1+Cost\ of\ Capital)^1} + \frac{E(FCFF_2)}{(1+Cost\ of\ Capital)^2} + \cdots + \frac{E(FCFF_{n+1})}{(Cost\ of\ Capital - g_n)(1+Cost\ of\ Capital)^n}$$

- As you borrow more, your free cash flows to the firm should remain unaffected, in most cases, since they are pre-debt cash flows, and a lower cost of capital will translate into a higher value, with one caveat.
  - As you borrow more and the risk of failure/bankruptcy increases, there is the possibility that customers may stop buying your products, suppliers may demand cash and your employees may start abandoning ship, creating a death spiral, where operating income and cash flows are affected, in what is termed "indirect bankruptcy costs".
  - In that case, the optimal debt ratio for a company is the one that maximizes value, not necessarily the one at which the cost of capital is minimized.

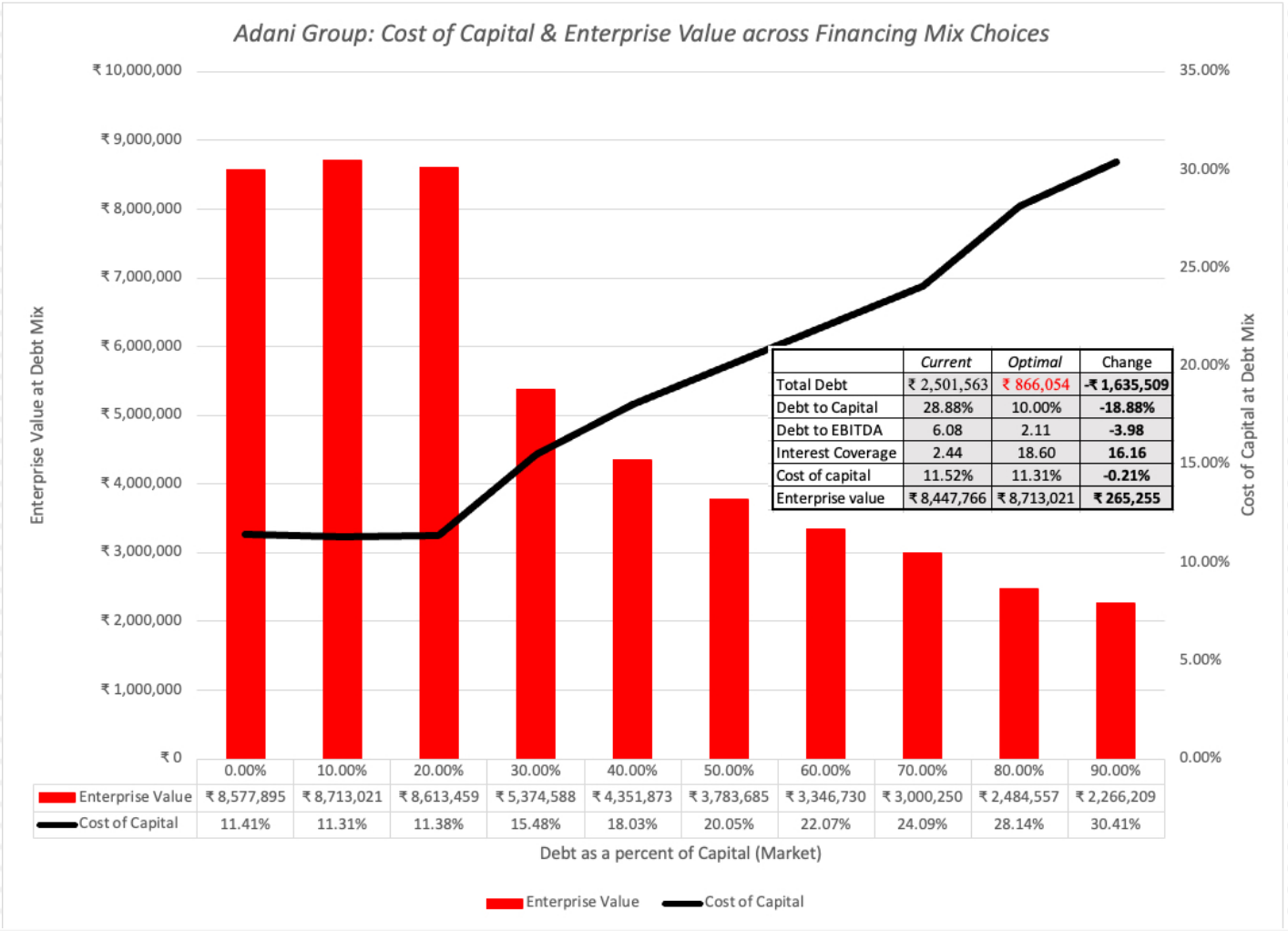
Adani Enterprise: Optimal Financing Mix?



	Current	*Optimal*	Change
Total Debt	₹ 413,443	₹ 185,308	**-₹ 228,135**
Debt to Capital	22.31%	10.00%	**-12.31%**
Debt to EBITDA	6.96	3.12	**-3.84**
Interest Coverage	2.39	16.05	**13.66**
Cost of capital	12.00%	11.78%	**-0.22%**
Enterprise value	₹ 1,811,970	₹ 1,868,031	**₹ 56,061**

	0.00%	10.00%	20.00%	30.00%	40.00%	50.00%	60.00%	70.00%	80.00%	90.00%
Enterprise Value	₹ 1,840,174	₹ 1,868,031	₹ 1,388,565	₹ 1,113,759	₹ 953,944	₹ 834,238	₹ 741,224	₹ 612,767	₹ 555,251	₹ 507,606
Cost of Capital	11.88%	11.78%	14.26%	16.64%	18.66%	20.68%	22.70%	26.49%	28.76%	31.03%

Adani Group: Optimal Financing Mix



	Current	Optimal	Change
Total Debt	₹ 2,501,563	₹ 866,054	-₹ 1,635,509
Debt to Capital	28.88%	10.00%	-18.88%
Debt to EBITDA	6.08	2.11	-3.98
Interest Coverage	2.44	18.60	16.16
Cost of capital	11.52%	11.31%	-0.21%
Enterprise value	₹ 8,447,766	₹ 8,713,021	₹ 265,255

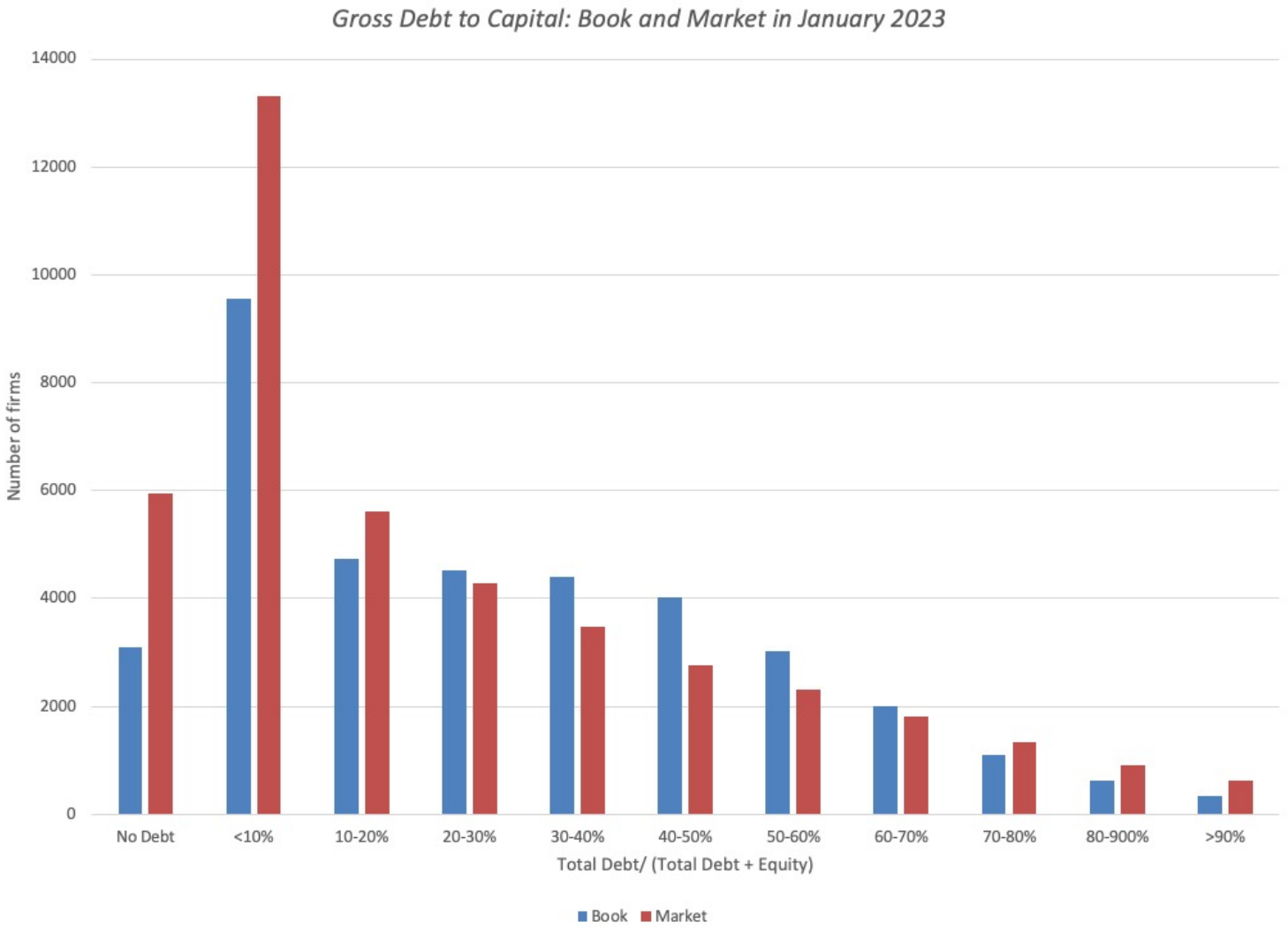
	0.00%	10.00%	20.00%	30.00%	40.00%	50.00%	60.00%	70.00%	80.00%	90.00%
Enterprise Value	₹ 8,577,895	₹ 8,713,021	₹ 8,613,459	₹ 5,374,588	₹ 4,351,873	₹ 3,783,685	₹ 3,346,730	₹ 3,000,250	₹ 2,484,557	₹ 2,266,209
Cost of Capital	11.41%	11.31%	11.38%	15.48%	18.03%	20.05%	22.07%	24.09%	28.14%	30.41%

Do firms optimize financing mix?

1. Inertia: In my view, at most companies the key determinant of debt policy, as it is of most other aspects of corporate finance, is inertia. In other words, companies continue the debt policies that they have used in the past.
2. Me-to-ism: The second and almost as powerful a force in determining debt policy is peer group behavior. It is for this reason that debt policy is far more likely to vary across industry groups than it is to vary within an industry group.
3. Because lenders are willing to lend me money: There is a final perspective on debt that can lead companies to borrow money, even if that borrowing is inimical to their own well being, and it is that if lenders offer them the money, you cannot turn them away. The "lenders made me do it" excuse for borrowing money is about as bad as the "buffet lunch made me overeat" excuse used by dieters, and it just as futile, because ultimately, the damage is self inflicted.
4. Control: A growing firm needs capital to fund its growth, and that capital has to come from equity issuances or new borrowing. When control becoming the dominant prerogative for those running the firm, they may choose to borrow money, even if it pushes up the cost of funding and increases truncation risk, rather than issue shares to the the public (and risk dilution their control of the firm).

Measuring Debt Loads: Debt to Capital

1. Gross versus Net Debt: The gross debt is the total debt owed by a firm, long or short term, whereas the net debt is estimated by netting out cash and marketable securities from the total debt.
2. Book versus Market: The book debt ratio is built around using the accounting measure of equity, usually shareholder's equity, as the value of equity. The market debt ratio, in contrast, uses the market's estimate of the value of equity, i.e., its market capitalization, as the value of equity.



		In US $		As % of Book Capital		As % of Market Capital	
Region	# firms	Gross Debt	Net Debt	Gross Debt	Net Debt	Gross Debt	Net Debt
Africa and Middle East	1,836	$750,657	$490,545	34.11%	25.28%	16.23%	11.24%
Australia & NZ	1,747	$275,195	$173,715	35.10%	25.45%	19.06%	12.94%
Canada	2,722	$798,610	$695,921	44.58%	41.21%	29.22%	26.45%
China	6,955	$5,341,960	$2,861,110	38.91%	25.43%	29.36%	18.21%
EU & Environs	5,243	$4,590,174	$3,422,098	45.92%	38.77%	28.88%	23.24%
Eastern Europe & Russia	287	$30,411	$18,392	31.64%	21.87%	29.46%	20.17%
India	3,574	$553,706	$457,984	43.17%	38.59%	17.68%	15.09%
Japan	3,787	$2,501,549	$1,516,648	40.28%	29.02%	34.44%	24.15%
Latin America & Caribbe	821	$721,909	$580,770	46.01%	40.67%	37.82%	32.86%
Small Asia	8,792	$2,306,715	$1,487,824	38.86%	29.08%	32.37%	23.59%
UK	1,052	$1,026,191	$776,365	44.03%	37.31%	28.99%	23.60%
United States	5,593	$9,021,212	$7,363,274	50.96%	45.89%	20.40%	17.30%
Global	42,409	$27,918,290	$19,844,646	43.88%	35.72%	25.34%	19.44%

Debt to Earnings/Cash Flows

- If debt to capital is not a good measure for judging over or under leverage, what is? The answer lies in looking at a company's earnings and cash flow capacity, relative to its debt obligations. The interest coverage ratio is the first of two ratios that I will use to measure this capacity:

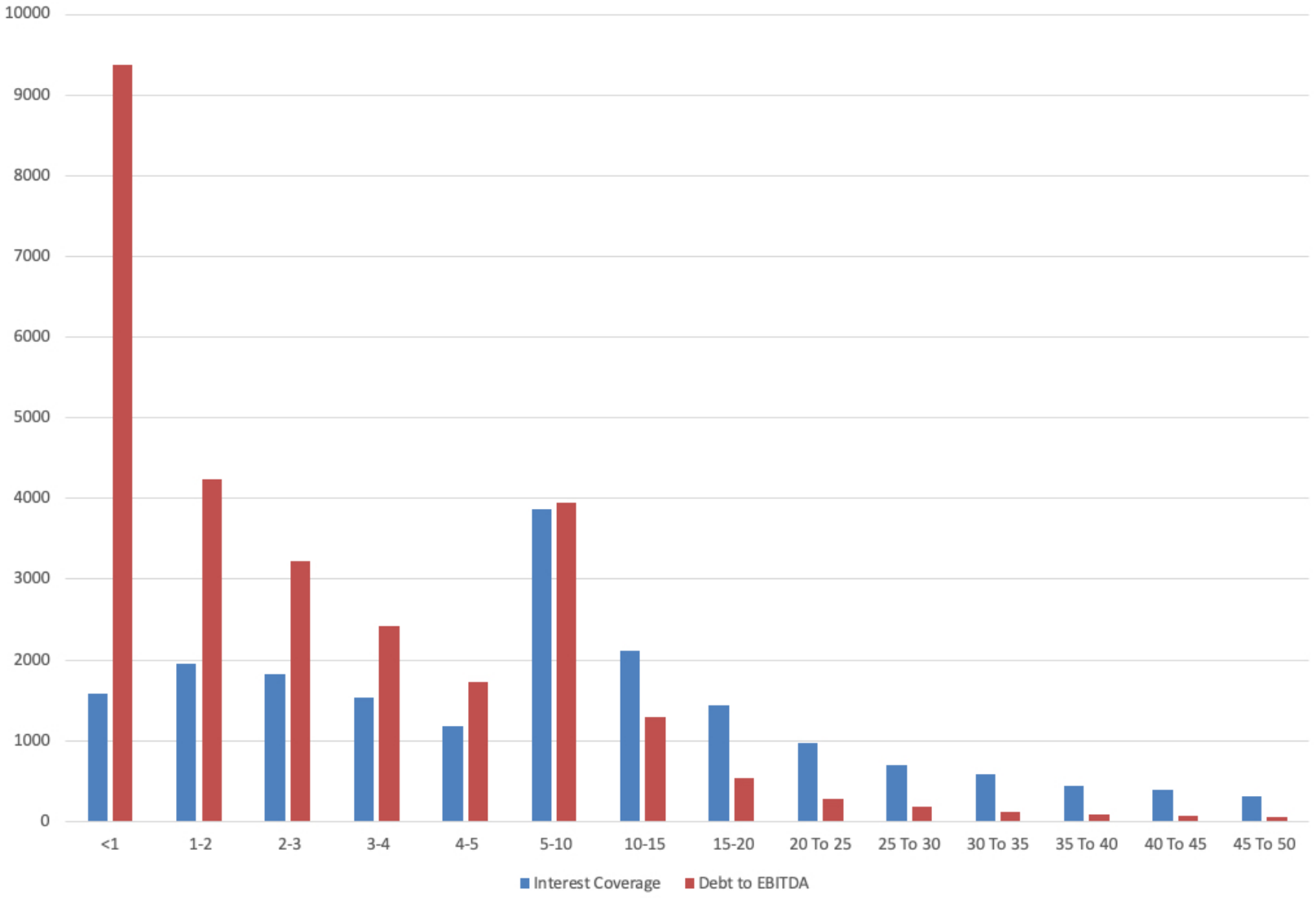
$$\text{Interest Coverage Ratio} = \frac{\text{Earnings before interest and taxes}}{\text{Interest expenses}}$$

- The second ratio remedies this problem by looking at debt as a multiple of EBITDA:

$$\text{Debt to EBITDA} = \frac{\text{Total Debt}}{\text{EBITDA}}$$

The logic behind this measure is simple. The denominator is a measure of operating cash flows, prior to a whole host of cash outflows, but a firm that borrows too much relative to EBITDA is stretching its capacity to repay that debt.

Debt Coverage Ratios: Global Companies in January 2023



		In US $					Interest	Total Debt	
Region	# firms	Total Debt	EBITDA	EBIT	Interest Expense	Net Debt Repaid	Coverage	EBIT	EBITDA
Communication Services	2,221	$2,640,026	$951,790	$500,687	$91,775	$37,427	5.46	5.27	2.77
Consumer Discretionary	6,227	$3,799,491	$966,630	$597,384	$92,124	-$50,534	6.48	6.36	3.93
Consumer Staples	3,102	$2,010,858	$681,651	$511,064	$67,248	-$48,716	7.60	3.93	2.95
Energy	1,486	$1,877,657	$1,119,826	$1,277,854	$77,075	$135,914	16.58	1.47	1.68
Health Care	4,653	$1,812,026	$682,574	$509,552	$60,395	-$40,159	8.44	3.56	2.65
Industrials	8,358	$5,485,610	$1,287,987	$1,004,974	$185,794	-$188,791	5.41	5.46	4.26
Information Technology	6,364	$1,919,329	$1,128,375	$795,640	$54,859	-$125,041	14.50	2.41	1.70
Materials	6,428	$2,076,473	$1,139,843	$791,172	$72,965	-$120,072	10.84	2.62	1.82
Real Estate	2,682	$3,208,838	$343,434	$254,994	$79,412	-$45,030	3.21	12.58	9.34
Utilities	888	$3,087,982	$527,199	$119,911	$102,692	-$278,767	1.17	25.75	5.86
Global	42,409	$27,918,290	$8,829,310	$6,363,233	$884,340	-$723,769	7.20	4.39	3.16

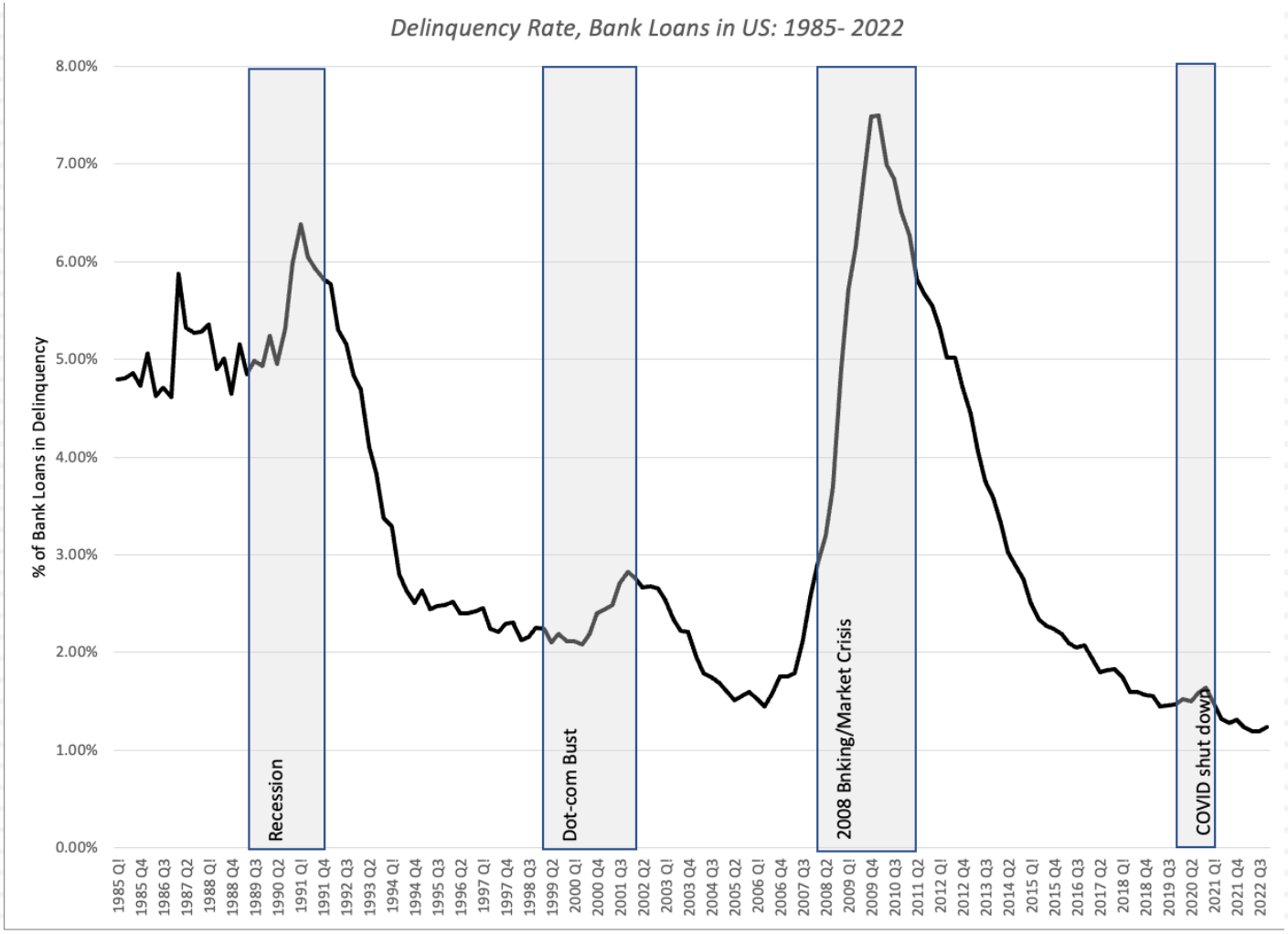
Most and Least Levered Industry Groups (US)

Industry Groups with the Most Debt					
Industry Name	*Number of firms*	*Book Debt to Capital*	*Market Debt to Capital*	*Interest Coverage Ratio*	*Debt to EBITDA*
Hotel/Gaming	69	81.80%	39.97%	0.87	19.76
Real Estate (Operations & Services)	60	64.48%	52.21%	0.65	19.30
R.E.I.T.	223	59.66%	43.61%	2.51	11.42
Real Estate (Development)	18	50.67%	52.95%	5.74	9.03
Green & Renewable Energy	19	56.53%	54.77%	1.23	8.39
Auto & Truck	31	59.40%	33.42%	8.86	6.87
Oil/Gas Distribution	23	66.02%	41.66%	2.04	6.41
Utility (Water)	16	57.20%	30.26%	3.01	6.36
Utility (General)	15	58.59%	42.59%	2.93	6.10
Air Transport	21	83.83%	65.08%	0.71	-23.45
Industry Groups with the Least Debt					
Industry Name	*Number of firms*	*Book Debt to Capital*	*Market Debt to Capital*	*Interest Coverage Ratio*	*Debt to EBITDA*
Software (Entertainment)	91	16.10%	4.58%	82.82	0.50
Steel	28	29.81%	22.24%	27.86	0.88
Oil/Gas (Integrated)	4	19.21%	10.32%	51.18	1.06
Paper/Forest Products	7	55.28%	30.49%	15.22	1.12
Metals & Mining	68	36.94%	17.73%	11.53	1.24
Semiconductor	68	29.84%	10.12%	18.13	1.25
Computers/Peripherals	42	70.99%	8.69%	25.01	1.33
Semiconductor Equip	30	42.96%	10.54%	22.31	1.38
Precious Metals	74	21.24%	14.03%	4.29	1.39
Shipbuilding & Marine	8	26.44%	28.07%	23.01	1.39

Corporate/Business Default: Reasons

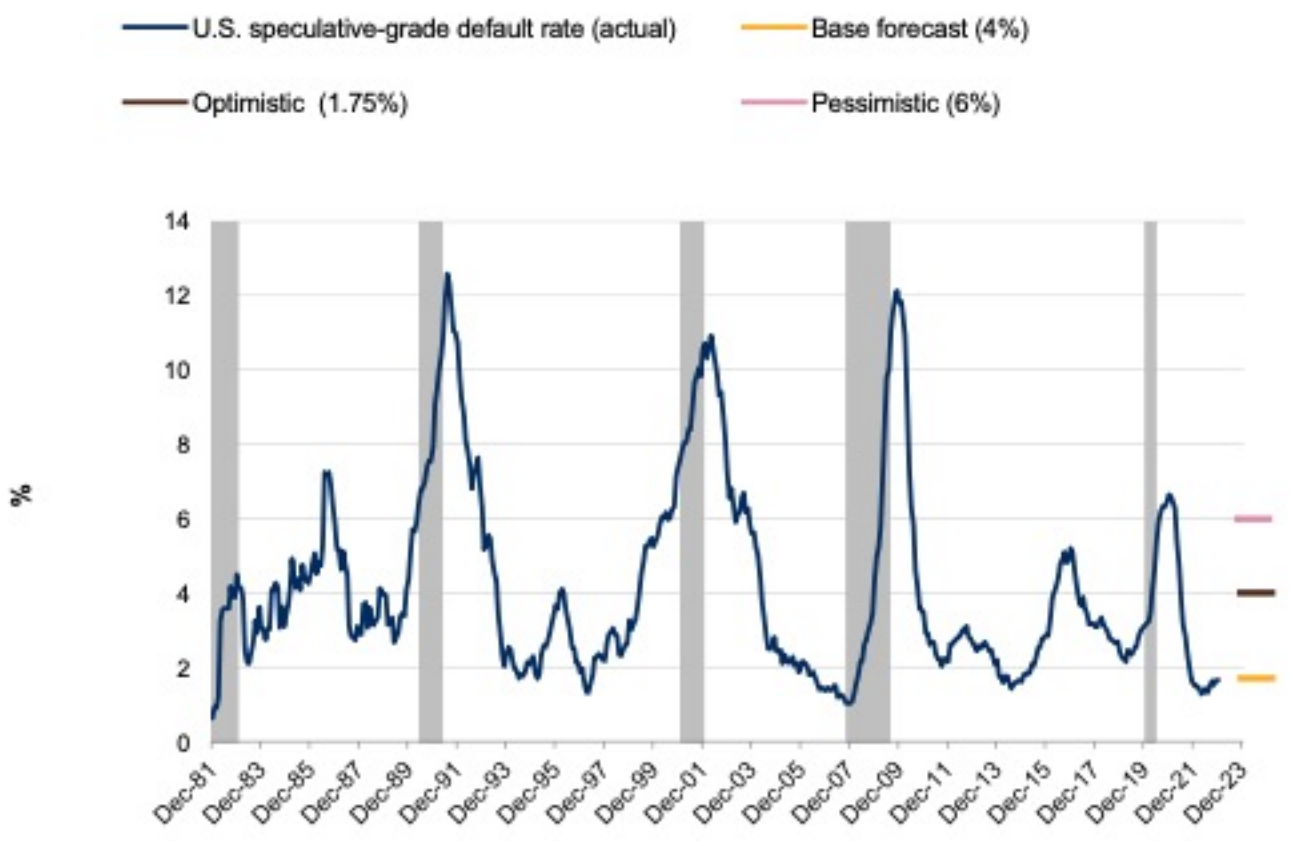
- Company-specific: Companies can overreach, borrowing far more than they can afford, effectively putting themselves at risk that if something goes wrong, they will have to default. In some cases, deteriorating businesses can cause default as well, as earnings drop below contractual commitments.
- Sector-wide: If disruption is the word that has excited venture capitalists and investors across the world for much of this century, it comes with a dark side, which is that the disrupted businesses can find themselves with imploding business models (shrinking revenues and operating margins under stress).
- Macro-driven: The trigger can be a macroeconomic factor, most often a recession, that puts pressure on earnings, leaving many companies exposed to default. (In 2020, a pandemic accomplished the same objective.)
- Interest Rate Dynamics: Finally, companies borrow based upon existing interest rates, but if rate change suddenly, debt that was affordable can turn unaffordable.

US Business Loan Delinquencies over time

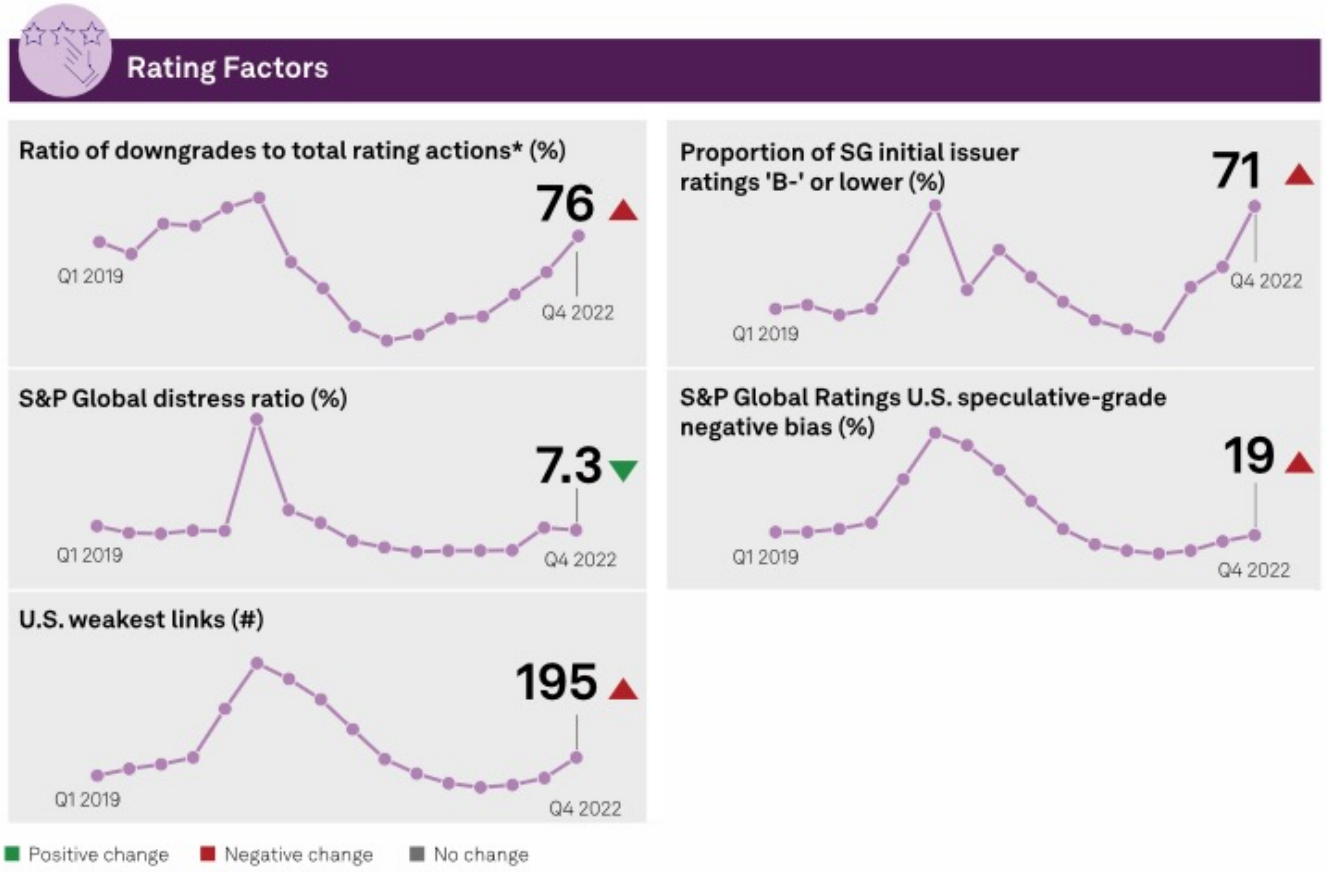


Corporate Default Rates over time

U.S. Trailing-12-Month Speculative-Grade Default Rate And December 2023 Forecast



The Challenge in 2023: Ratings Downgrade a signal?



*For speculative-grade entities only. Except for the unemployment rate, data is from Q1 2019 to either the most recent quarter-end or Feb. 8, 2023; unemployment rate is from Q1 2019 to January 2023. Source: Economics and Country Risk from IHS Markit, Board of Governors of the Federal Reserve System (US), Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, Chicago Board Options Exchange's CBOE Volatility Index, and S&P Global Ratings Credit Research & Insights.

A Familiar Duo: Drivers of Default

	No recession	*Steep Recession*
Inflation subsides to pre-pandemic levels	Resilient earnings + Lower interest rates	Earnings Decline + Lower interest rates
	Default rate lowest, as refinancing occurs at lower rate.	Default spreads rise for cyciclal firms.
Inflation stays high	Resilient earnings + Higher interest rates	Earnings Decline + Higher interest rates
	Default rates rise for levered firms with debt refinancing needs.	Default rates highest and occur across the board