DATA UPDATE 1 FOR 2022: THE GOOD, THE BAD AND THE UGLY!

Stories and Numbers

A New Year Ritual

- I return to a ritual that I have practiced for thirty years, and that is to take a look at not just market changes over the last year, but also to get a measure of the financial standing and practices of companies around the world.
- Those measures took a beating in 2020, as COVID decimated the earnings of companies in many sectors and regions of the world, and while 2021 was a return to some degree of normalcy, there is still damage that has to be worked through.
- This post will be one of a series, where I will put different aspects of financial data under the microscope, to get a sense of how companies are adapting (or not) to a changing world.

The Moneyball Revolution

- When I first started posting data on my website for public consumption, it was designed to encourage corporate financial analysts and investors alike to use more data in their decision making.
- In making that pitch, I drew on one of my favorite movies, Moneyball, where Billy Beane (played by Brad Pitt), the general manager of the Oakland As, revolutionized baseball by using data as an antidote to the gut feeling and intuition of old-time baseball scouts.
- In the years since Beane tried it with baseball, Moneyball has decisively won the battle for sporting executives' minds, as sport after sport has adopted its adage of trusting the data, with basketball, football, soccer and even cricket adopting sabermetrics, as this sporting spin off on data science is called.

Big Data and Crowd Wisdom

- As tech companies have expanded their reach into our personal lives, collecting information on choices and decisions that used to private, *big data* has become not just a buzzword, but also a justification for investing billions in companies/projects that have no discernible pathway to profitability, but offer access to data.
- Along the way, we have all also bought into the notion of *crowd wisdom*, where aggregating the choices of tens of thousands of choice-makers, no matter how naive, yields a consensus that beats expert opinion. After all, we get our restaurant choices from Yelp reviews, our movie recommendations from Rotten Tomatoes and we have even built crypto currencies around the idea of crowd checking transactions.

A believer and a skeptic…

- I was a believer in big data and crowd wisdom, well before those terms were even invented. After all, I have lived much of my professional life in financial markets, where there has always been lots of data and market prices are set by crowds of investors.
- That said, it is my experience with markets that has also made me skeptical about the over selling of both notions, since we have an entire branch of finance (behavioral finance/economics) that has developed to explain how more data does not always lead to better decisions and why crowds can often be collectively wrong.

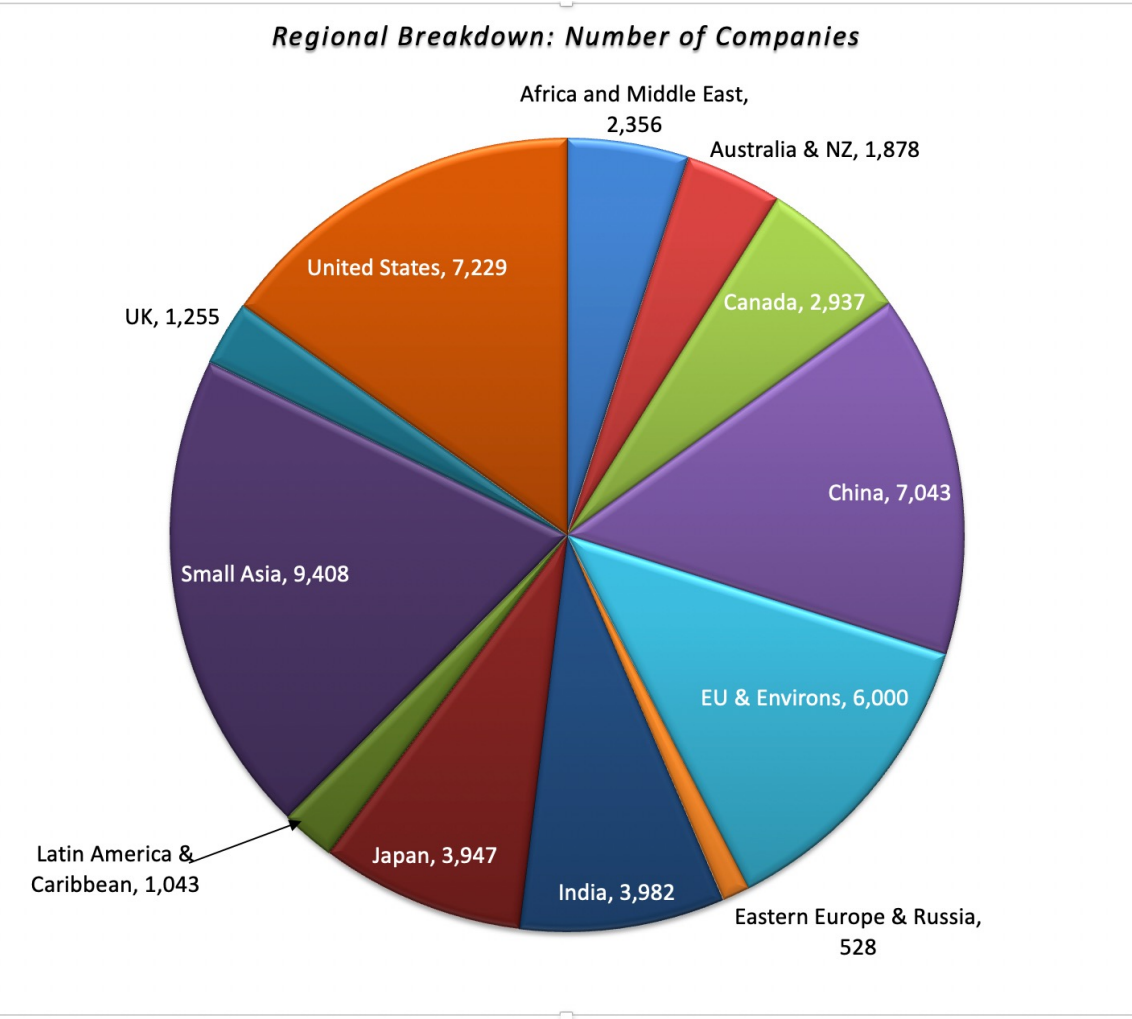
My four caveats

- More data is not always better than less data: We as investors and analysts) were drowning in data, and that data overload is now a more more imminent danger than not have enough data.
- Data does not always provide direction: As you work with data, you discover that its messages are almost always muddled, and that estimates always come with ranges and standard errors. In short, the key discipline that you need to tame and use data is statistics, and it is one reason that I created my own quirky version of a statistics class on my website.
- Mean Reversion works, until it does not: Much of investing over the last century in the US has been built on betting on mean reversion. While mean reversion is a strong force in stable markets, as the US was for much of the last century, it breaks down when there are structural changes in markets and economies, as I argued in this post
- The consensus can be wrong: As you look at the industry averages I report on corporate finance statistics, from debt ratios to dividend yields, remember that just because every company in a sector borrows a lot, it does not mean that high debt ratios make sense, and if you are using my industry averages on pricing multiples, the fact that investors are paying high multiples of revenues for cloud companies does not imply that the high pricing is justified.

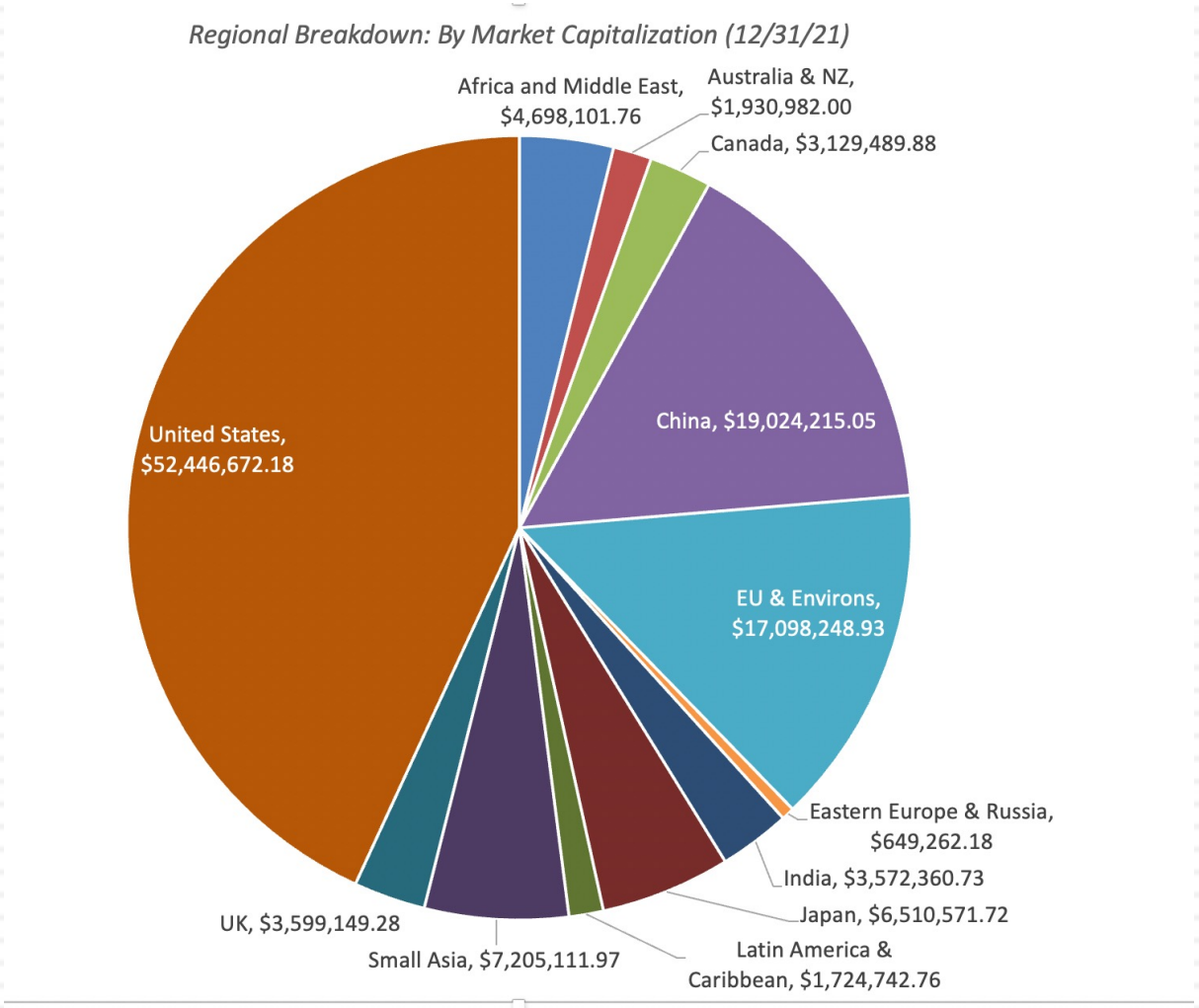
My Data Universe

- When I first started my data collection and analysis in 1990, data was difficult to come by, and when available, it was expensive.
  - Without hundreds of thousands of dollars to spend on databases, I started my journey spending about a thousand dollars a year, already hitting budget constraints, subscribing to a Value Line database that was mailed to me on a CD every year.
  - That database covered just 1700 US companies, and reported on a limited list of variables on each, which I sliced and diced to report on about a dozen variables, broken down by industry.
- Times have changed, and I now have access to extraordinarily detailed data on almost all publicly traded global companies. I am grateful to all the services that provide me with raw data, but I am cognizant that they are businesses, and try not to undercut them, or act as a competitor.

Companies in my database: Numbers, by Region



And by market cap



By Sector..

Primary Sector	*Number of firms*	*Total Market Cap on 12/31/21 (in millions of US $)*	*As % of Total*
Communication Services	2,199	$ 9,068,298.28	7.46%
Consumer Discretionary	6,242	$ 14,568,685.15	11.98%
Consumer Staples	3,054	$ 8,869,249.45	7.29%
Energy	1,516	$ 5,915,238.59	4.86%
Financials	5,614	$ 17,178,686.41	14.13%
Health Care	4,569	$ 12,471,809.36	10.26%
Industrials	8,223	$ 14,455,362.22	11.89%
Information Technology	6,191	$ 23,374,818.58	19.22%
Materials	6,322	$ 7,700,646.98	6.33%
Real Estate	2,738	$ 4,318,625.72	3.55%
Utilities	938	$ 3,667,487.71	3.02%
All Sectors	47,606	$ 121,588,908.44	100.00%

By industry group…

Industry Group	*# firms*	*Industry Group*	*# firms*	*Industry Group*	*# firms*	*Industry Group*	*# firms*
Advertising	348	Drugs (Pharmaceutical)	1,371	Insurance (Prop/Cas.)	231	Retail (General)	204
Aerospace/Defense	272	Education	244	Investments & Asset Management	1,706	Retail (Grocery and Food)	184
Air Transport	151	Electrical Equipment	999	Machinery	1,421	Retail (Online)	353
Apparel	1,170	Electronics (Consumer & Office)	138	Metals & Mining	1,706	Retail (Special Lines)	479
Auto & Truck	152	Electronics (General)	1,425	Office Equipment & Services	145	Rubber& Tires	90
Auto Parts	728	Engineering/Construction	1,267	Oil/Gas (Integrated)	46	Semiconductor	581
Bank (Money Center)	610	Entertainment	734	Oil/Gas (Production and Exploration)	642	Semiconductor Equip	324
Banks (Regional)	816	Environmental & Waste Services	353	Oil/Gas Distribution	165	Shipbuilding & Marine	348
Beverage (Alcoholic)	219	Farming/Agriculture	417	Oilfield Svcs/Equip.	457	Shoe	84
Beverage (Soft)	100	Financial Svcs. (Non-bank & Insurance)	1,102	Packaging & Container	414	Software (Entertainment)	317
Broadcasting	139	Food Processing	1,377	Paper/Forest Products	272	Software (Internet)	151
Brokerage & Investment Banking	599	Food Wholesalers	160	Power	541	Software (System & Application)	1,603
Building Materials	449	Furn/Home Furnishings	359	Precious Metals	947	Steel	709
Business & Consumer Services	948	Green & Renewable Energy	239	Publishing & Newspapers	337	Telecom (Wireless)	101
Cable TV	54	Healthcare Products	852	R.E.I.T.	812	Telecom. Equipment	465
Chemical (Basic)	854	Healthcare Support Services	445	Real Estate (Development)	893	Telecom. Services	296
Chemical (Diversified)	71	Heathcare Information and Technology	455	Real Estate (General/Diversified)	344	Tobacco	55
Chemical (Specialty)	898	Homebuilding	168	Real Estate (Operations & Services)	739	Transportation	295
Coal & Related Energy	206	Hospitals/Healthcare Facilities	223	Recreation	324	Transportation (Railroads)	51
Computer Services	1,040	Hotel/Gaming	654	Reinsurance	38	Trucking	232
Computers/Peripherals	336	Household Products	575	Restaurant/Dining	385	Utility (General)	54
Construction Supplies	784	Information Services	266	Retail (Automotive)	196	Utility (Water)	104
Diversified	318	Insurance (General)	215	Retail (Building Supply)	98		
Drugs (Biotechnology)	1,223	Insurance (Life)	142	Retail (Distributors)	1,002		

Data Variables: Macro

- **Risk Premiums**: I report the latest estimates of these corporate bond spreads at this link. In the equity market, the price of risk (equity risk premium) is more difficult to observe, and I start by reporting on the conventional estimate of this measure by looking at historical returns (going back to 1928) on stocks, bonds, bills and real estate at this link. I offer an alternative forward-looking and more dynamic measure of this premium in an implied premium, with the start of 2022 estimate here and the historical values (going back to 1960) of this implied premium here.
- **Risk free Rates**: While the US treasury bond rate is widely reported, I contrast its actual value with what I call an intrinsic measure of the rate, computed by adding the inflation rate to real growth each year at this link.
- **Currency and Country Risk**: Since valuation often requires comfort with moving across currencies, I provide estimates of risk free rates in different currencies at this link. I extend my equity risk premium approach to cover other countries, using sovereign default spreads as my starting point, at this link.
- **Tax Rates**: Since the old saying about death and taxes is true, I report on marginal tax rates in different countries at this link, and while I would love to claim that I did the hard work, the credit belongs to KPMG for keeping this data updated over time.

Data Variables: Company Level

Risk Measures	Cost of Funding	Pricing Multiples
1. Beta	1. Cost of Equity	1. PE &PEG
2. Standard deviation in stock price	2. Cost of Debt	2. Price to Book & EV to Inv Capital
3. Regression statistics (R squared, Jensen's alpha)	3. Cost of Capital	3. EV/EBIT and EV/EBITDA
4. High-Low Price Risk Measure		4. EV/Sales and Price/Sales
Profitability	**Financial Leverage**	**Cash Flow Add-ons**
1. Net Profit Margin	1. D/E ratio & Debt/Capital	1. Cap Ex & Net Cap Ex (including acquisitions & R&D)
2. Operating Margin	2. Debt/EBITDA	2. Non-cash Working Capital as % of Revenue
3. Gross Margins	3. Interest Coverage Ratios	3. Sales/Invested Capital
4. EBITDA, EBIT and EBITDAR&D Margins	4. Accounting lease debt vs my estimates	4. COVID effects on market cap and earnings
5. Tax rates (cash, effective)	5. Debt breakdown (term, type)	
Returns	**Dividend Policy**	5. R&D and Goodwill statistics
1. Return on Equity	1. Dividend Payout & Yield	6. Financing flows from debt/equity
2. Return on Invested Capital	2. Dividends/FCFE & (Dividends + Buybacks)/ FCFE	**Growth**
3. ROE – Cost of Equity	**Corporate Governance**	1. Historical growth in earnings & revenues
4. ROIC – Cost of Capital	1. CEO, Insider and Institutional Holdings	2. Sustainable growth in earnings per share and operating income

Data Timing…

- Almost all of the data that you will see in my updates reflects data that I have collected in the last week (January 1, 2022- January 8, 2022.
- That said, there will be difference in timeliness on different data variables, largely based upon whether the data comes from the market or from financial statements.
  - For data that comes from the market, such as market capitalization and costs of capital, the current data is as of January 1, 2022.
  - For data that comes from financial statements, the numbers that I use come from the most recent filings, which for most companies will be data through September 30, 2021.
  - Thus, my trailing PE ratio for January 1, 2022, is computed by dividing the market capitalization on January 1, 2022, by the earnings in the twelve months ending in September 2021.
  - While that may seem inconsistent, it is totally consistent with the idea that you use the most current data that you can get for each variable, when doing analyses.

And timeliness…

- As we go through the year, both the market and the accounting numbers will change, and a full-fledged data service would recompute and update the numbers.
- I am not, and have no desire to be, a data service, and will not be updating until the start of 2023.
- There are two potential dangers in using my data later in the year
  - With the first emerging if the market sees a steep shift, up or down, which will alter all of the pricing multiples
  - And the second occurring in sectors that are either transforming quickly (disrupted sectors) or are commodity-based (where changes in commodity prices can alter financials quickly).

Estimation Choices

- When I embarked on the task of estimating industry averages, I must confess that I did not think much of the mechanics of how to compute those averages, assuming that all I would have to do is take the mean of a series of numbers. I realized very quickly that computing industry averages for pricing and accounting ratios was not that simple.
- To illustrate why, I present you with a slice of my table of PE ratios, by industry grouping, for US firms, the start of 2022:

Industry Name	*Number of firm*	Current PE	Trailing PE	Forward PE	Aggregate Mkt Cap/ Net Income (all firms)	Aggregate Mkt Cap/ Trailing Net Income (only money making firms)
Advertising	49	54.99	88.10	78.62	NA	16.10
Aerospace/Defense	73	35.90	37.01	27.37	8187.51	22.40
Air Transport	21	7.47	3708.23	26.36	NA	99.75
Apparel	39	28.61	36.12	17.49	NA	18.54
Auto & Truck	26	996.16	55.50	28.28	311.58	65.13
Auto Parts	38	397.01	30.43	17.35	NA	18.61
Bank (Money Center)	7	21.40	9.00	12.32	18.49	9.42
Banks (Regional)	563	37.18	28.84	13.43	20.24	12.71
Beverage (Alcoholic)	21	38.92	54.54	26.80	46.16	52.48
Beverage (Soft)	32	106.96	111.14	52.13	34.99	29.93
Broadcasting	28	7.05	8.83	24.99	24.44	8.19
Brokerage & Investment Banking	31	108.53	12.62	12.82	19.31	10.94
Building Materials	44	34.82	28.10	21.77	39.71	21.32

And missing data…

- The other issue that I had to confront, especially because my large sample includes many small companies, listed and traded in markets with information disclosure holes, is whether to restrict my sample to markets like the US and Europe, where information is more dependable and complete, or to stay with my larger sample.
- The problem with doing the former is that you create bias in your statistics by removing smaller and risker firms from your sample, and I chose to have my cake and eat it too, by keeping all the firms in my global sample, but also reporting the averages for US and European firms separately.

Using the Data

- Understand the data: I have tried my best to describe how I compute my numbers in the spreadsheets that contain the data, in a worksheet titled "Variables and FAQ". On some of the variables, especially on equity risk premiums, you may want to read the papers that I have, where I explain my reasoning, or watch my classes on them. Whatever you do, and this is general advice, never use data from an external source (including mine), if you do not understand how the data is computed.
- Take ownership: If you decide to use any of my data, especially in corporate financial analysis and valuation, please recognize that it is still your analysis or valuation.
- Don't bring me personally into your disagreements, especially in legal settings: If you are in disagreement with a colleague, a client or an adversary, I am okay with you using data from my website to buttress your arguments, but please do not bring me in personally into your debates. This applies in spades, if you are in a legal setting, since I believe that courts are where valuation first principles go to die.

In conclusion…

- I would love to tell you that I am driven by altruistic motives in sharing my data, and push for sainthood, but I am not.
  - I would have produced all of the data that you see anyway, because I will need it for my work, both in teaching and in practice, all year.
  - If there is a hidden agenda here, it is that I think that in spite of advances over the last few decades, the investing world still has imbalances, especially on data access, and I would like it make a little flatter.
- Having produced the data, it seems churlish to not share it, especially since it costs me absolutely nothing to do so. If you find the data useful, I am glad, and rather than thank me, please pass on the sharing.