

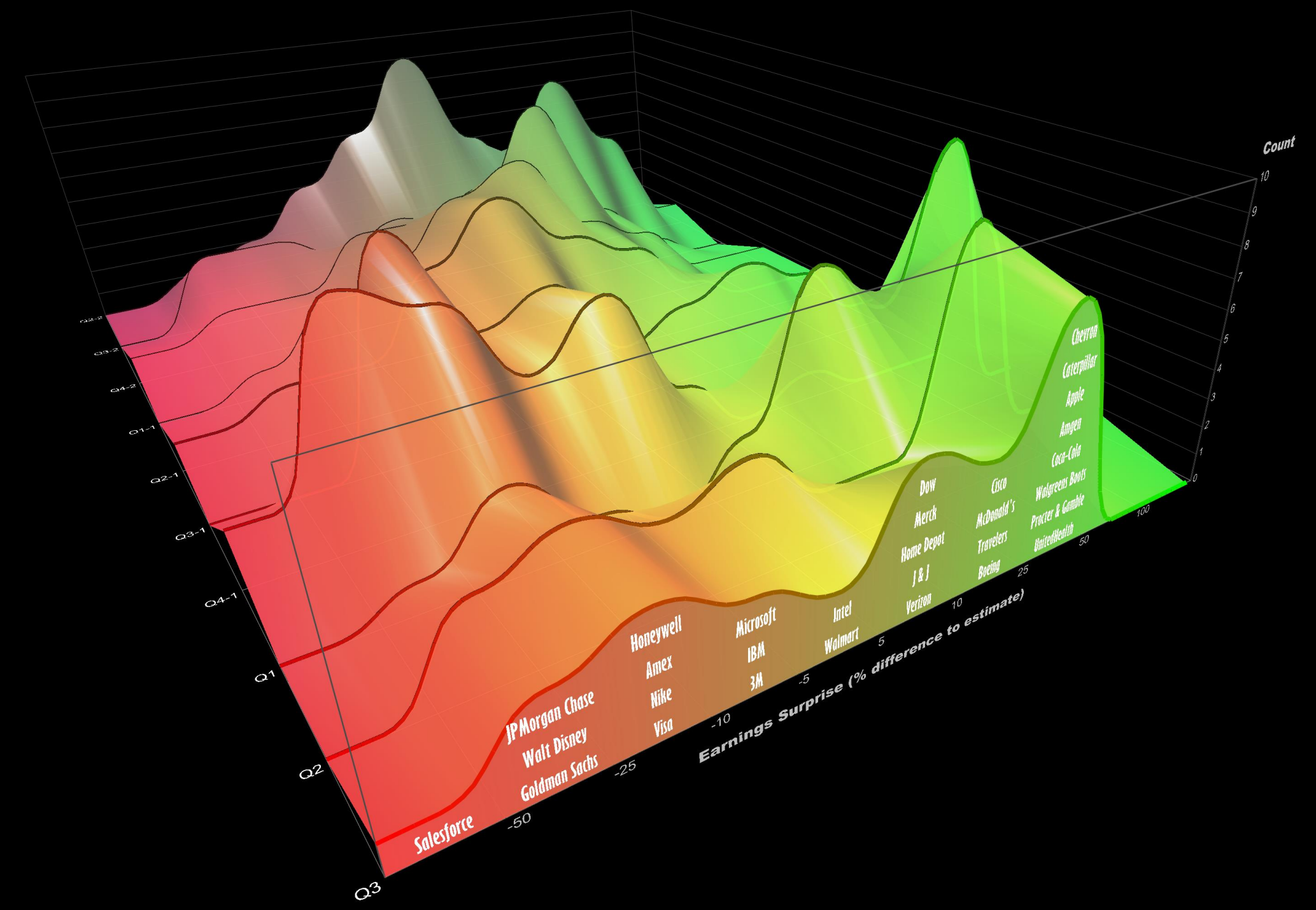
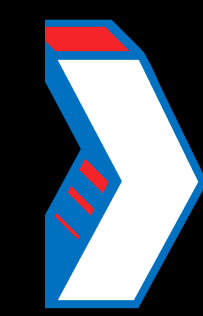
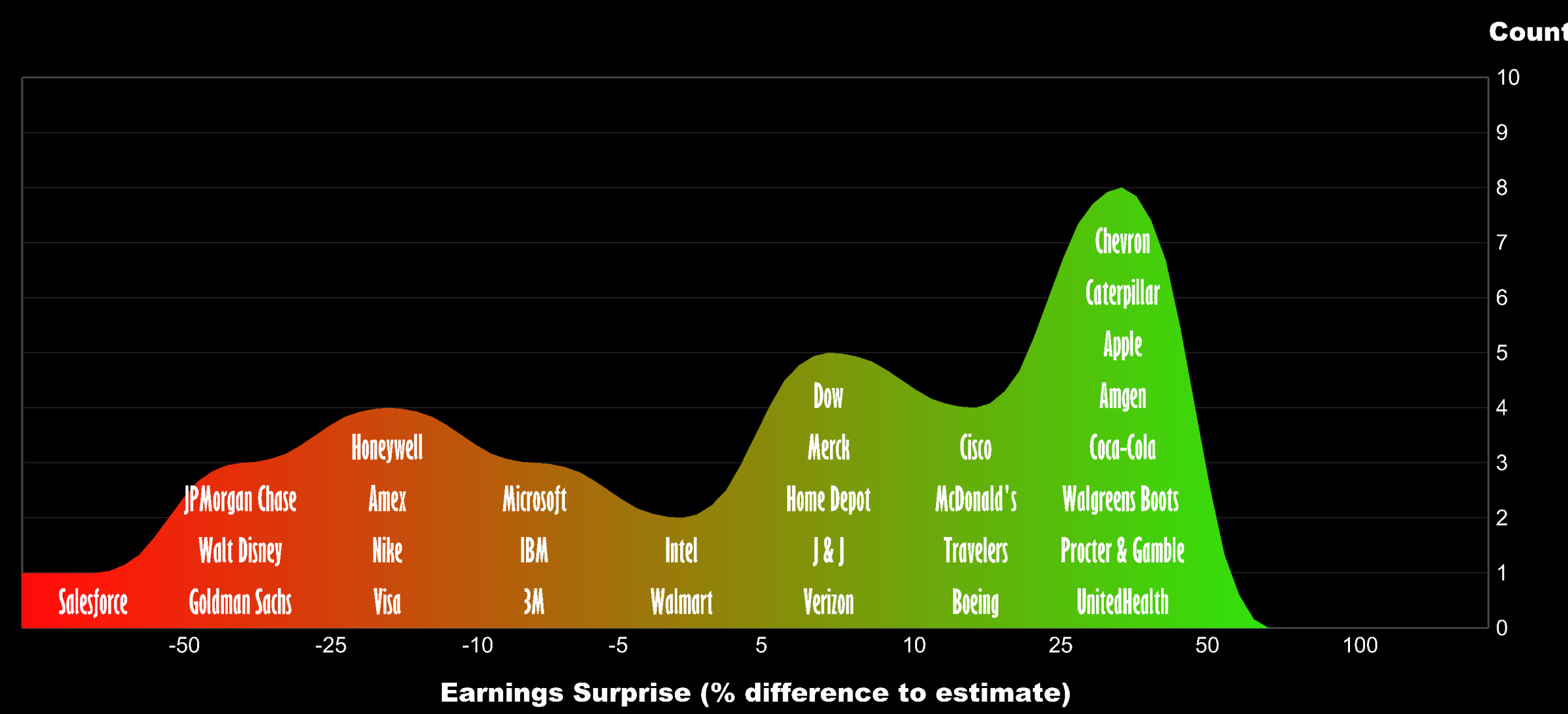


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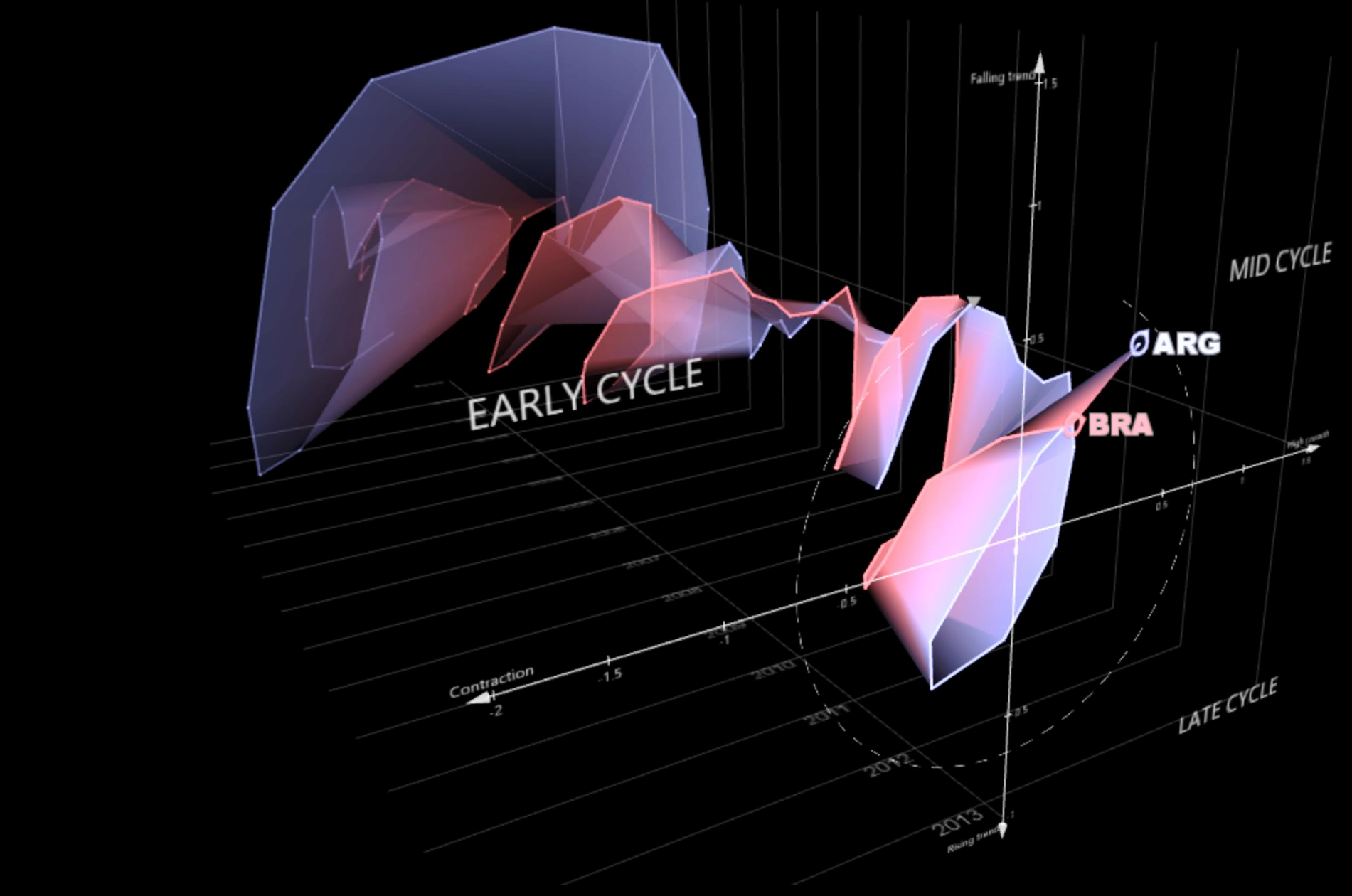
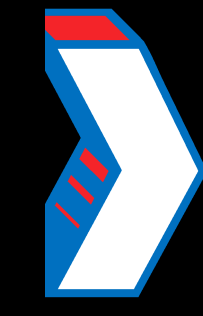
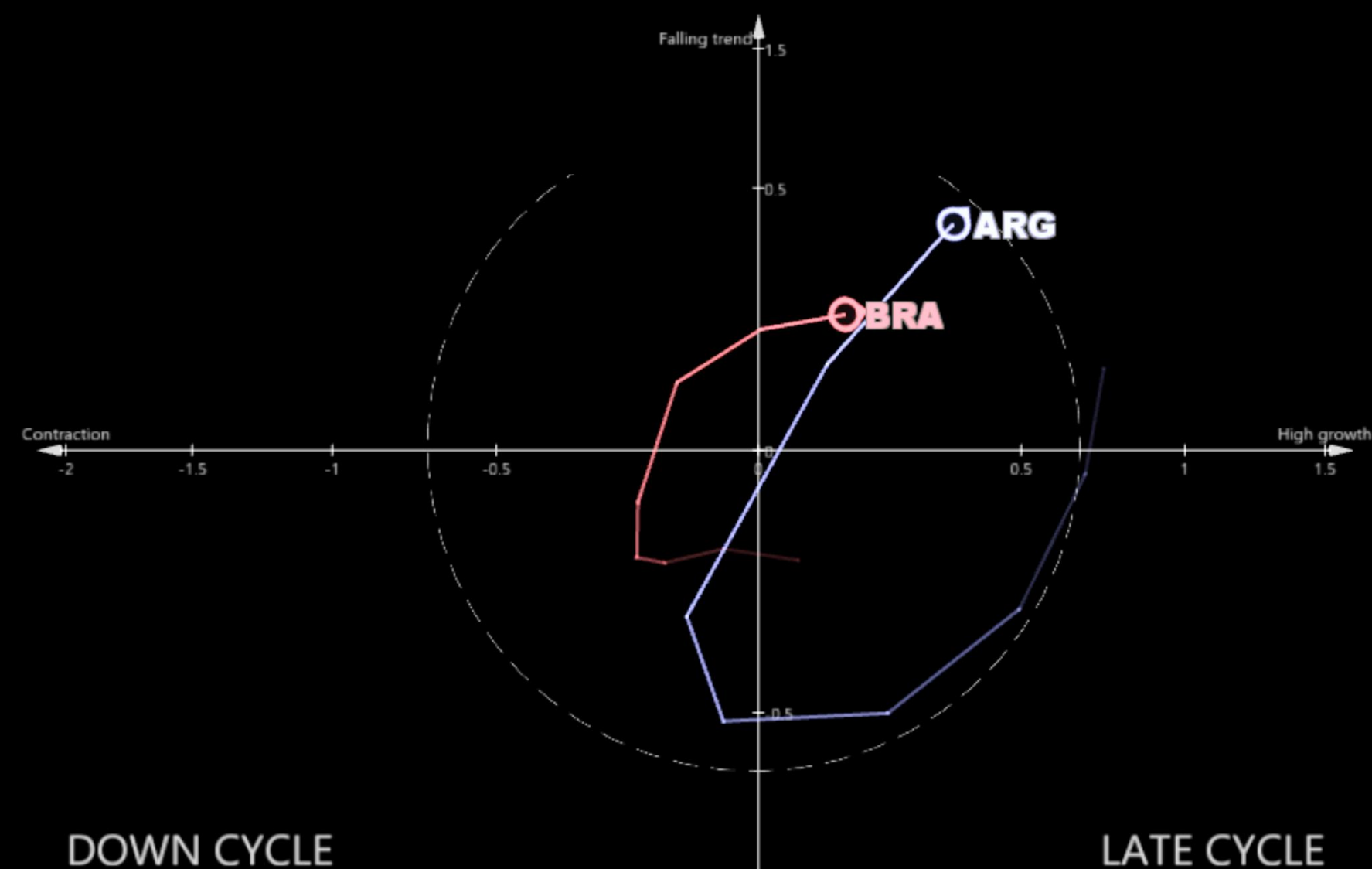


Extruding Common 2D Charts with Timeseries Data:

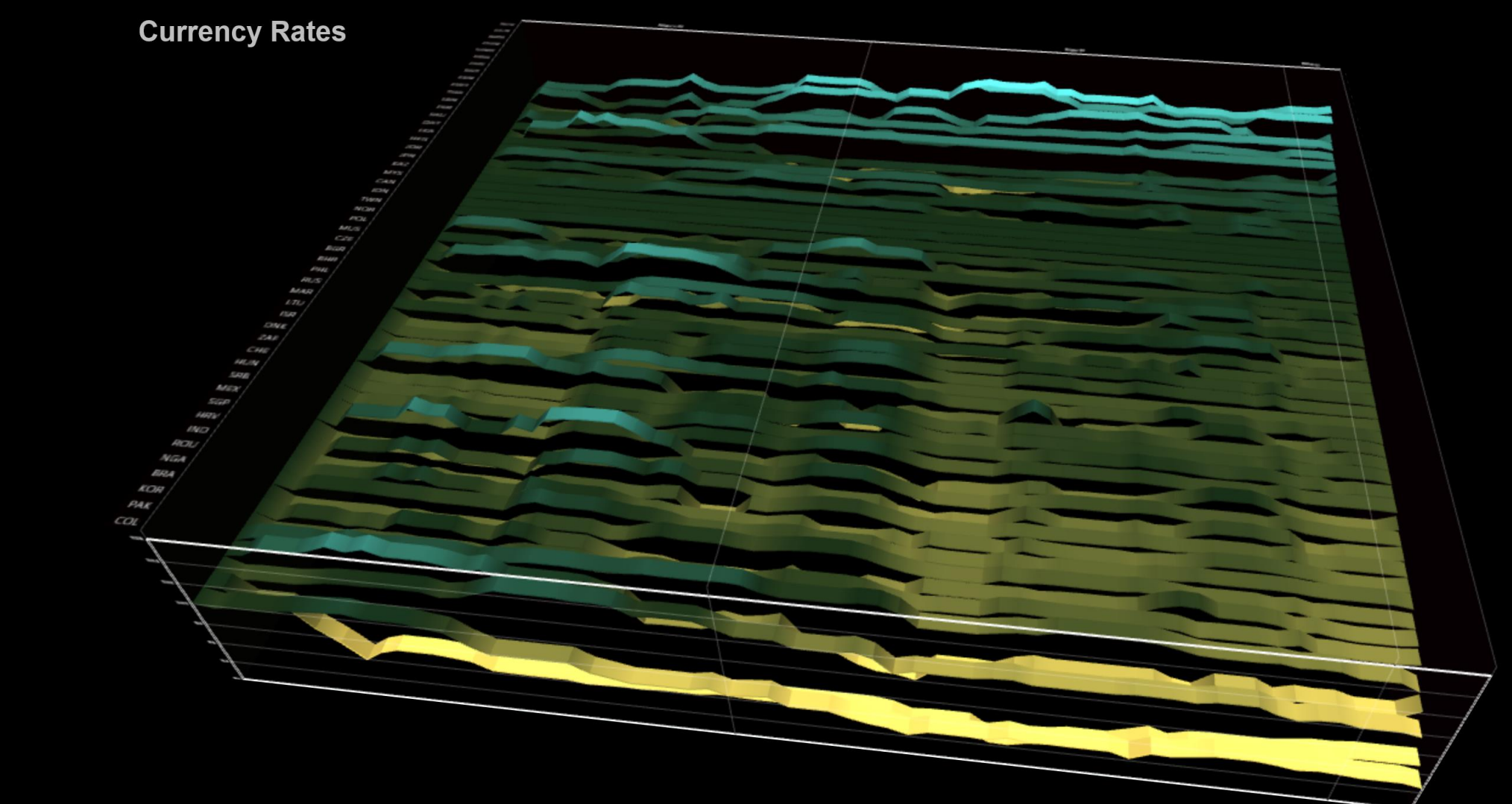
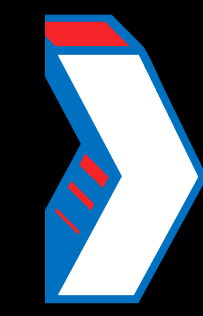
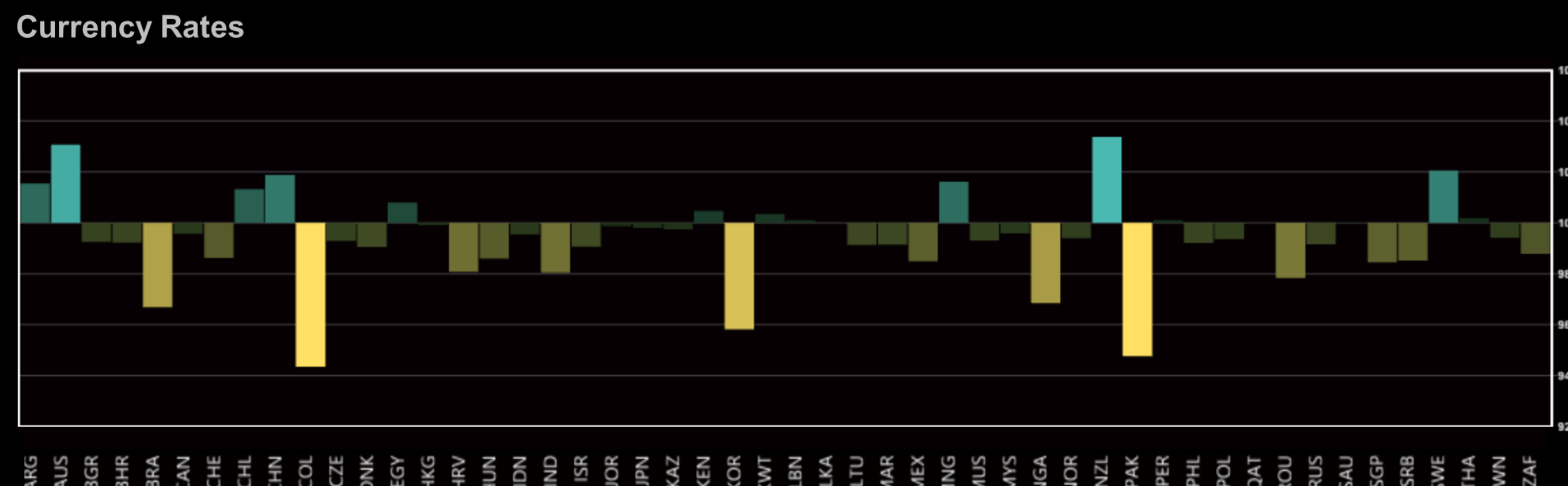
Histogram



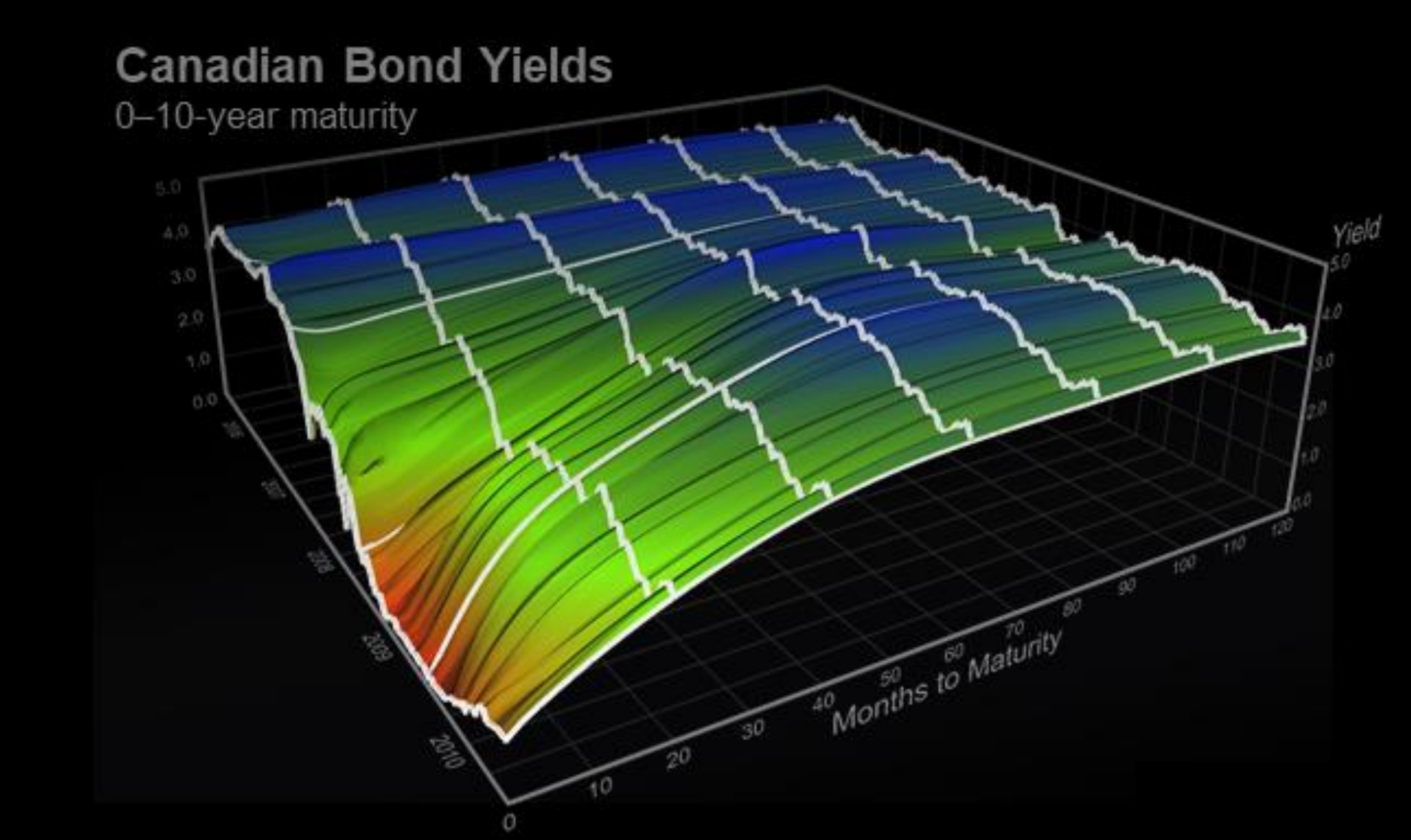
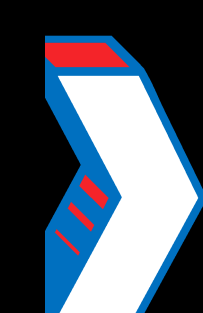
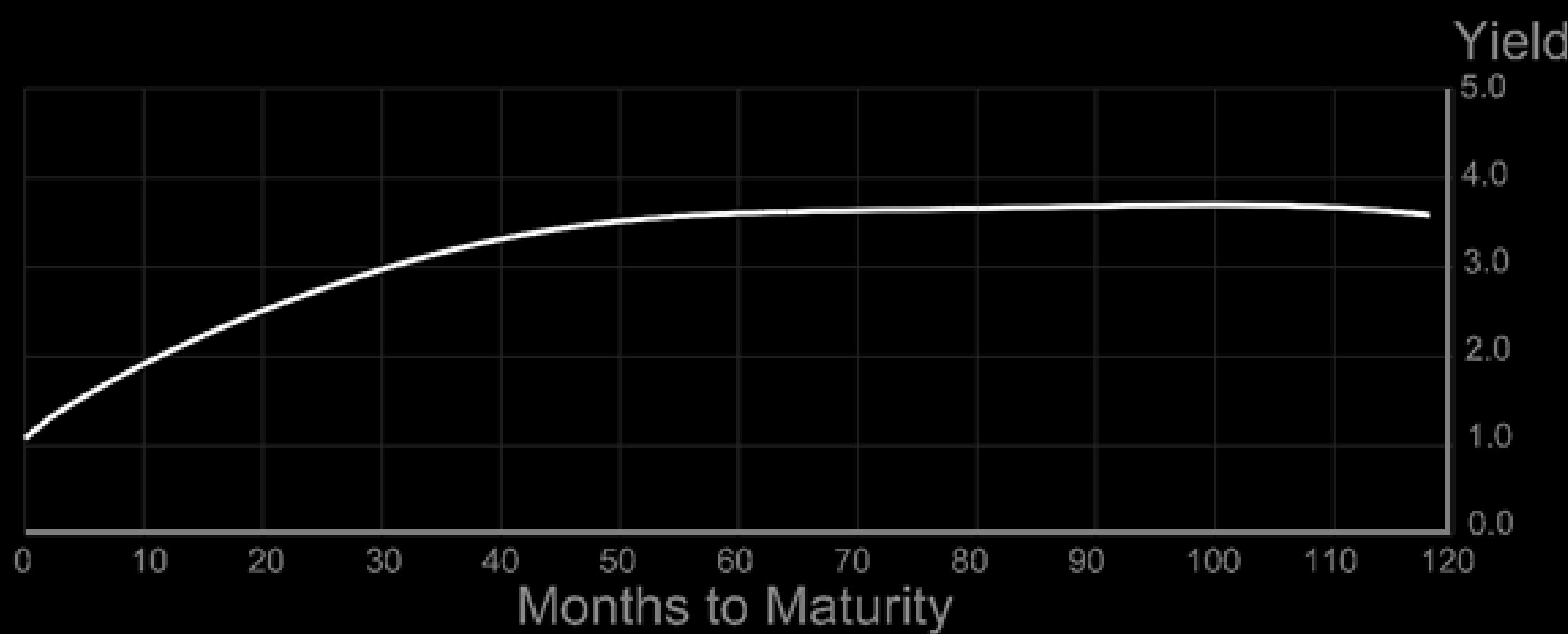
Scatter-plot (wormplot)



Bar chart



Line chart



Why?

Financial experts *rarely* use 3D charts. They *do* use the above 2D point-in-time charts frequently, and they use timeseries charts even more: Table 1 →

How?

No VR/AR/3D glasses. Always retain 2D chart in front plane, 3D appears on rotate, plus visual depth cues. Restrain camera from unexpected viewpoints, plus snap to timeseries side view and heatmap top view (far right).

So what?

3Difying (a drag interaction from 2D to 3D or back) most popular interaction (40%). Replaced 3 prior unsuccessful ambient vis. Funded scope expanded from 2 to 5 vis, plus CAVE & mobile and 3D printing (far right).

Table 1: Popular Charts in 25 Financial Publications

Chart type	Num charts	Pct charts	Num pubs
Timeseries (line/bar)	958	71.5	25
Stack/cluster bar	116	8.7	20
Simple bar	107	8.0	14
Pie/donut	27	2.0	11
Scatterplot/bubble	20	1.5	11
Boxplot / range	33	2.5	8
Curve (e.g. yield)	17	1.3	6
Histogram	5	0.4	5
Heatmap/rank grid	45	3.4	4

1. S. Azzarelli, Guide to the Markets, J.P. Morgan, New York, 2020.
2. T. Baig, ASEAN-6 and Covid-19: DBS Chartbook, DBS Bank Ltd, Jakarta, 2020.
3. B. Besier and N. Roccana, US Strategy, Snapshot, EMD Financial Group, New York, 2020.
4. C. Brzezinski and F. Fischer, Germany's Economy Chart Book: On the brink of recession? Economic and Financial Analysis Division of ING DiBa, Amsterdam, 2019.
5. L. Embos-Metelguy, J. Weinstein, D. Hofschire, and R. Carrigan, Quarterly Market Update, Fidelity Investments, FMR LLC, Boston, 2019.
6. P. Hildebrand and J. Bolvin, 2020 midyear outlook, Blackrock, New York, 2020.
7. M. Klok, Slagging Profitability for third year in a row, Dutch Economy Chart Book, ING Netherlands, Economic Department, Amsterdam, 2019.
8. M. Loufir, K. Romanos-Louizos, L. Troup, and A. Lampousis, Emerging Markets Analysis Quarterly Chart Book, National Bank of Greece, Economic Analysis Division, Athens, 2019.
9. E. Neelsen, I. Helmig, and M. Vahl, The UNICredit Economics Chartbook, UNICredit Research, Munich, 2019.
10. N. Resse, U.S. Business Cycle Report, Merk Investments, LLC, New York, 2020.
11. T. Sioek and M. Bernard, March Economic Chart Book (Snapshot), Deutsche Bank Research, New York, 2019.
12. D. Sheldon and C. Hine, FX Chartbook: Core Themes & Favorite Trades, Credit Suisse, London, 2017.
13. R.-P. Stoefler and M. Valek, Chartbook: In Gold we Trust 2017, Incrementum, Liechtenstein, 2017.
14. M. Williams, J. Evans-Pritchard, and F. Palmer, China Chart Book, Capital Economics, Toronto, 2019.
15. R. Yeung, L.-G. Liu, and L. Lam, Hong Kong Monthly Chart Book, Australia and New Zealand Banking Group Limited (ANZ), Melbourne, 2011.
16. --, Q2 2020 Market ChartBook, Baird Private Wealth Management, Robert W. Baird & Co., Charlotte, NC, 2020.
17. --, A selection of charts presented by Fathion Consulting at the UK Economic Outlook Seminar on 2nd August 2019, Thomson Reuters, London, 2019.
18. --, CIO Chart Book, Bank of America, Merrill Lynch, New York, 2018.
19. --, QVM Chartbook: Conditions and Relative Performance, QVM Invest, Glastonbury, CT, 2018.
20. --, Chartbook: S&P's & Property Trusts, S&P Research, Singapore Exchange, Singapore, 2019.
21. --, Interest Rates Chart Book, CME Group, Chicago, 2019.
22. --, Chartbook, Reserve Bank of Fiji, Suva, Fiji, 2020.
23. --, Fixed Income Chartbook, DWS Investments UK Limited, London, 2020.
24. --, Quarterly Markets Review, Plum Street Advisors, New York, 2020.
25. --, Wealth Management Perspectives, Morgan Stanley, New York, 2020.

Note: -- indicates no authors named in the publication.

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