

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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	:	
UNITED STATES OF AMERICA	:	
	:	22 Cr. 673 (LAK)
v.	:	
	:	
SAMUEL BANKMAN-FRIED,	:	
	:	
Defendant.	:	
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EXPERT WITNESS DISCLOSURE
JOSEPH M. PIMBLEY, PH.D.

I. Background & Qualifications

1. I am currently affiliated with PF2 Securities, a litigation consulting firm. My expertise includes the review and analysis of financial risk management; review and creation of financial and mathematical models for purposes of risk assessment or valuation of derivatives, structured products, and other investments; credit risk and credit rating models; economic capital calculations; portfolio risk/return calculations; other cash flow or business optimization applications; consulting and expert testimony in connection with legal disputes involving structured products, credit ratings, derivatives, bond insurance, and securities trading; providing advisory opinions and compliance review of investment policies and their execution for the portfolios of endowments and other entities including corporate Treasuries, colleges/universities, insurance companies, and non-profits.
2. I have been active in the financial profession for more than 30 years in areas including derivatives and securities trading, portfolio and risk management, trading systems, credit ratings, structured finance, banking, investment advisory, consulting, financial litigation, and teaching.
3. I have published more than seventy articles in financial and economic journals and publications, provided more than seventy presentations for financial professionals on various topics in the capital markets, co-authored three books and contributed chapters to two others.
4. In addition to my published work, I have extensive experience managing risk and information technology systems, including financial databases and associated code layer, analyzing cashflows within transactions and across firms, and valuing illiquid securities and derivatives and have done consulting work as well as provided expert reports in various legal disputes and other litigation related to such activities and instruments.

5. I hold a Ph.D. in Theoretical Physics (1985), an M.S. in Physics (1981), and a B.S. in Physics (1980) (*summa cum laude* and minor in Mathematics) from Rensselaer Polytechnic Institute. I am a past member of the Editorial Board of the GARP (Global Association of Risk Professionals) *Risk Professional*, and have served on the Advisory Board of the Polytechnic University Center for Finance & Technology. I am also a member of Sigma Pi Sigma, the National Physics Honor Society, and was elected a Senior Member of the Institute of Electrical and Electronic Engineers (IEEE). I am a past member of Sigma Xi (scientific research society), the IEEE Election Devices Society, the Society for Industrial and Applied Mathematics (SIAM), and the American Association for the Advancement of Science (AAAS).
6. I am a past Member of the Executive Advisory Board for the Master's Degree "Quantitative Finance and Risk Analytics" program of the Lally School of Management at the Rensselaer Polytechnic Institute. I am also a past Member of the Strategic Advisory Board of ARMA International, LLC, an infrastructure engineering firm. I am also a past member of the Board of Directors of SOLVE, a financial technology firm.
7. I am the Editor of the *Journal of Derivatives*, a widely known and respected publication for financial professionals and academics.
8. My current *curriculum vitae* is attached as Appendix A. Appendix B lists all publications I have authored in the prior ten years. Appendix C lists the cases in which I have testified as an expert by deposition over the prior four years. I have not testified as an expert at trial over the prior four years.
9. I have no financial interest in the outcome of this case. I am being compensated for my time and services on an hourly basis at the billing rate of \$720 per hour with reimbursement for reasonable expenses. My compensation in this case is not in any way contingent or based on the opinions presented herein or on the outcome of these legal proceedings.

II. Scope and Summary of Opinions

If called as a witness, I will testify to the following:

10. I understand that the FTX Debtors provided a snapshot of FTX's Amazon Web Services database as of November 2022 (the AWS database) as part of discovery in this case. I used database queries to extract data from the AWS database related to the line of credit (LOC) FTX provided to Alameda and Alameda-affiliated entities for the time period October 2021 to November 2022. Specifically, I extracted data showing the amount of the LOC that was used by Alameda and its affiliated entities over that time period. I provide this database extract as a graph in Appendix D. I provide also in Appendix E the database queries I employed to extract this in-use LOC data from the AWS database. Appendix F shows the database data responsive to the queries in Appendix E.
11. The extracted data from the AWS database shows that Alameda's usage of its line of credit fluctuated between approximately \$1 billion and \$3 billion between October 7,

2021 and September 18, 2022, and decreased for a substantial portion of the month of June 2022.

12. I have extracted from the “balances” table of the AWS database the following:

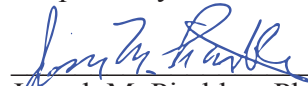
- a. The sum of the fair values expressed in US dollars of balances in all accounts excluding the accounts of Alameda and FTX and limited to the “coins” USD (US dollar), BTC (Bitcoin), ETH (Ethereum), and USDT (Tether). This result is \$5,842,162,373.
- b. The portion of the sum in (a) preceding in which the accounts have `spot_margin_enabled` equals TRUE or `spot_margin_lending_enabled` equals TRUE or show futures activity (as denoted by non-zero `net_size` field in the “positions” table). This result is \$4,539,524,208. I append these results of (a) and (b) in pie chart format in Appendix G. I provide also in Appendix H the database queries I employed to extract the (a) and (b) results. Appendix I shows the accounts of Alameda and FTX that were excluded in the queries in Appendix H.
- c. The sum of the fair values expressed in US dollars of balances in all accounts excluding the accounts of Alameda and FTX aggregated over all “coins.” This result is \$8,943,675,162.
- d. The portion of the sum in (c) preceding in which the accounts have `spot_margin_enabled` equals TRUE or `spot_margin_lending_enabled` equals TRUE or show futures activity (as denoted by non-zero `net_size` field in the “positions” table). This result is \$6,910,615,317. I append these results of (c) and (d) in pie chart format in Appendix J. I provide also in Appendix K the database queries I employed to extract the (c) and (d) results.

13. This extracted balances data as of November 2022 shows that the majority (65%) of the non-Alameda / non-FTX balances are concentrated in just four coins (USD, BTC, ETH, and USDT) relative to the hundreds of coins defined within the AWS database. Whether for just the four coins or for all coins, more than 75% of the non-Alameda / non-FTX balances arise from accounts that have `spot_margin_enabled` equals TRUE or `spot_margin_lending_enabled` equals TRUE or show futures activity.

III. Basis of Opinions

14. My opinions offered herein are based on my own academic and professional education, training, skill and knowledge regarding common and prevailing methods of computer coding and data retrieval of financial industry firms. I base my opinions also on my review of the AWS database and the portions of the codebase produced in discovery.

Respectfully submitted,


Joseph M. Pimbley, Ph.D.

APPENDIX A: Resume of Joseph M. Pimbley

Joseph M. Pimbley

Member, *PF2 Securities*, January 2015 – Present

Principal, *Maxwell Consulting, LLC*, March 2010 - Present

Editor, *Journal of Derivatives*, September 2018 - Present

Education

Ph.D. (Theoretical Physics) *Rensselaer Polytechnic Institute*, 1985

M.S. (Physics) *Rensselaer Polytechnic Institute*, 1981

B.S. (Physics) *Rensselaer Polytechnic Institute*, 1980
(*summa cum laude* and minor in Mathematics)

Board Positions

Editorial Board of *Risk Professional*, 2003 - 2018

Global Association of Risk Professionals

Board of Directors, 2013 - 2021

Solve Advisors, Inc.

Board of Directors, 2015 - 2020

Loud-Hailer, Inc.

Past Professional Experience

January 2021 – June 2021

Derivatives Strategist of *777 Partners, LLC*, a private equity firm. Responsible for creation of asset-backed security (ABS) transactions and the associated structuring, quantitative modeling, and credit rating agency relations and negotiations. Asset types for securitization included guaranteed and life-contingent structured settlements and commission and litigation receivables.

June 2008 – March 2010

Managing Director within the Financial Engineering practice of *Duff & Phelps, LLC* – a worldwide financial consulting firm. Activities included direct contact with clients (hedge funds, private equity firms, financial institutions) and review of client activities to formulate and execute beneficial advisory projects. Special focus was on derivative transactions and structured products (RMBS, CDOs, CMBS, *et cetera*). Leading role in the Lehman Brothers bankruptcy court Examiner investigation that yielded important findings for funding, leverage, collateral, liquidity, and valuation challenges that led to the bankruptcy.

March 2002 – May 2008

Executive Vice President and Head of Institutional Risk of *ACA Capital Holdings* (ACA), a hybrid financial products and insurance company with risk positions and assets under management exceeding \$90 billion. Reported to the CEO and to the Board of Directors. Responsible for firm-wide, enterprise risk management (ERM), quantitative modeling, information technology, and data integrity. Senior decision maker on Credit and Investment Committees for municipal bonds, structured bonds and products, bank loans, derivative transactions. Created proprietary cash-flow and *Monte Carlo* simulation models of credit, interest rate, and derivative pricing and risk for CDO and Structured Credit transactions in *Visual Basic* and C#. Recruited and managed a team of quantitative finance professionals. Managed the Information Technology function and led the technical development of proprietary database systems for trading and risk management. Chief Risk Officer of *ACA Capital Partners I* (a “credit hedge fund”) with oversight of investments, funding, risk assessment, and valuations.

July 1997 – February 2002

Senior Vice President and Credit Derivative Product Manager of *Sumitomo Mitsui Banking Corporation Capital Markets* (SMBC CM). Primary task was to lead the development of a business in credit derivatives. Duties included business development (products, distribution, *et cetera*), execution of trades, the construction of models (*Excel Visual Basic* and C/C++ routines with market data feeds) for pricing and risk management, and creation of necessary trading and operational systems. Primary focus was on managing economic and regulatory capital for the parent bank’s US and Asian corporate loan portfolio.

October 1995 - July 1997

Senior Risk Manager in the Capital Markets Services group of the *Financial Guaranty Insurance Company*. Responsible for all risks (market, credit, liquidity, operational, *et cetera*) in the firm’s (\$6 billion) financial services for municipalities (primarily guaranteed investment contracts and asset management). Managed the capital markets IT function. Helped conceive, launch, and obtain triple-**A** ratings for a new special-purpose vehicle.

May 1994 - October 1995

Senior Analyst in the *Structured Finance* group within the Corporate division of *Moody's Investors Service*. Primarily responsible for research in the credit and market

risks of structured notes and credit derivatives. The results of such research include the development of new rating businesses (*e.g.*, individual security and mutual fund market risk ratings) as well as *Moody's*, industry, and academic publications. Also active in rating guaranteed investment contracts (GICs), collateralized bond/loan obligations and other special purpose vehicles.

February 1993 - May 1994

Assistant Vice President in the *Risk Analytics* Unit of Citicorp North America Global Finance. Had primary responsibility for the analysis and measurement of credit risk in all "non-standard" and "emerging market" derivative transactions originating in North America, Latin America, South America and Southeast Asia. Such transactions included derivatives on equities, equity indices, debt securities, single currency interest rate swaps, cross currency swaps, foreign exchange contracts and commodities. Also responsible for validating and generating pricing models for derivative instruments. Activities required extensive computer model development (**FORTRAN**, **C** and spreadsheet programming) and daily communication with traders and financial engineers.

January 1987 - February 1993

Assistant Professor in the Department of Mathematical Sciences of Rensselaer Polytechnic Institute. Conducted independent research in the mathematics and physics of operation of various semiconductor devices. Discovered (with a colleague) a novel, *superresolution* spectral estimation algorithm. Taught classes on the subjects of ordinary differential equations (graduate and undergraduate), advanced mathematical modeling (graduate), numerical computing (undergraduate), probability, statistics and calculus with symbolic computing.

June 1980 - January 1987

Staff Physicist at the General Electric Corporate Research and Development Center, Schenectady, New York. Directed and coordinated the fabrication of Charge-Injection Device (solid-state) imagers. Suggested and studied design and fabrication innovations to improve quantum yield and signal/noise ratio of these imaging devices and won a 1982 (General Electric) Dushman Award for this advanced development work. Successfully led the development of a radiation-hard, MOS fabrication process. Studied channel hot electron reliability in short-channel NMOS FETs and made new contributions to this field. Derived and solved numerically a new set of semiconductor device equations for more accurate modeling of device physics.

Books

Joe Pimbley and Laurel McDevitt, *Banking on Failure*, Maxwell Consulting, LLC, ISBN-10: 069227426X, 2014.

Joe Pimbley and Laurel McDevitt, *Simple Money*, 2nd Edition, Maxwell Consulting, LLC, ISBN-10: 0615864627, 2013.

J. M. Pimbley, M. Ghezzi, H. G. Parks and D. M. Brown, *Advanced CMOS Process Technology*, Academic Press, San Diego, 1989.

S. D. Silverstein and J. M. Pimbley, "The Minimum Free Energy Method of Spectral Estimation," chapter in *Advanced Signal Processing*, ed. S. Haykin, Prentice-Hall, 1991.

J. M. Pimbley, "Transistors", chapter in *Magill's Survey of Science: Applied Science*, F. N. Magill, editor, Salem Press, Pasadena, **ISBN 0-89356-705-1**, 1993.

Finance Articles

(**Seventy-plus articles** written for financial professionals on a wide range of topics in the capital markets from 1994 to the present. This list is available upon request. Five recent articles are cited below.)

J. M. Pimbley, "Testing and Mapping an Empirical Exercise Boundary for the American Put Option," *J. Derivatives*, Fall 2021.

J. M. Pimbley, "Efficient Routines for CDO Loss Calculations", *J. Structured Finance* **26**(1), 29-43, Spring 2020.

J. M. Pimbley and G. Phillips, "The *Myer* Ruling and its Limitations," *Commercial Law Quarterly*, **34**(1), March-May 2020.

J. M. Pimbley, "Simple Correlated Binomial Portfolio Loss Distribution", *J. Structured Finance* **25**(2), 75-86, Summer 2019.

J. M. Pimbley, "T-Vasicek Credit Portfolio Loss Distribution", *J. Structured Finance* **24**(3), 65-78, Fall 2018.

Quant Perspectives

(Monthly column for the *Risk News & Resources* publication of the *Global Association of Risk Professionals*)

Finance Public Presentations

(**Seventy-plus public presentations** for financial professionals on a wide range of topics in the capital markets from 1994 to the present. This list is available upon request. Four recent presentations are cited below.)

J. M. Pimbley and R. Chang, “Rapid Monte Carlo Simulation – Hands-On Learning,” invited lecture for *GARP 18th Annual Risk Management Convention*, New York, March 2017; also Industry Webcast “Rapid Monte Carlo Simulation,” May 2016.

J. M. Pimbley, “Mathematical Finance, Models, Simulation and Today’s Pressing Problem”, invited lecture for *INFORMS 2016*, Nashville, November 2016.

J. M. Pimbley and S. R. Lindo, “Flight Simulator for Banking,” invited PRMIA Webcast, October 2015.

J. M. Pimbley, “Data, Models & Concepts for Quantitative Finance”, GARP Webcast, August 2013 - includes autoregressive (AR) and other statistical time series analysis.

Journal Articles

(Nearly one hundred refereed articles in the fields of electrical, chemical, and nuclear engineering and semiconductor physics. This list is available upon request.)

PATENTS

J. M. Pimbley and H. R. Philipp, *Radiation Transmissive Electrode Structure*, 4,450,465, May 1984.

C.-Y. Wei and J. M. Pimbley, *Extended Drain Concept for Reduced Hot Electron Effect*, 4,613,882, September 1986.

R. D. Lillquist, J. M. Pimbley and T. L. Vogelsong, **Vipervision** *Composite Visible/Thermal Infrared Imaging System*, 4,679,068, July 1987.

C.-Y. Wei and J. M. Pimbley, *Graded Extended Drain Concept for Reduced Hot Electron Effect I*, 4,680,603, July 1987.

J. M. Pimbley, G. Gildenblat, C.-Y. Wei and J. Shappir, *Hybrid Extended Drain Concept for Reduced Hot Electron Effect*, 4,691,433, September 1987.

C.-Y. Wei and J. M. Pimbley, *Graded Extended Drain Concept for Reduced Hot Electron Effect II*, 4,859,620, August 1989.

Y. Nissan-Cohen, P. A. Frank, J. M. Pimbley, D. M. Brown, E. W. Balch, and K. J. Polasko, *Adjustable Windage Method and Mask for Correction of Proximity Effect in Submicron Photolithography*, 4,895,780, January 1990.

J. M. Pimbley and D. M. Brown, *Metallization Method for VLSIC Fabrication*, current status unknown.

S. D. Silverstein and J. M. Pimbley, *Spectral Estimation Utilizing an Autocorrelation-Based Minimum Free Energy Method*, 4,982,150, January 1991.

S. D. Silverstein and J. M. Pimbley, *Spectral Estimation Utilizing a Minimum Free Energy Method with Recursive Reflection Coefficients*, 5,068,597, November 1991.

H. M. Rougeot and J. M. Pimbley, *Light Detector Scintillator Radioactive Image Pick-up Apparatus with Improved Light Collection*, 1993-203755, August 1993.

D. M. Brown, M. Ghezzi and J. M. Pimbley, *Silicon Carbide MOSFET Integrated Circuit Devices*, current status unknown.

H. M. Rougeot and J. M. Pimbley, *Photodetector Scintillator Radiation Imager Having High Efficiency Light Collection*, 5,208,460, May 1993.

R. F. Kwasnick and J. M. Pimbley, *Method of Locating Common Electrode Shorts in an Imager Assembly*, 5,463,322, October 1995.

D. A. McDevitt-Pimbley and J. M. Pimbley, *Systems and Methods for Traffic Guidance Nodes and Traffic Navigating Entities*, 9,142,127, September 2015.

D. A. McDevitt-Pimbley and J. M. Pimbley, *Systems and Methods for Traffic Guidance Nodes and Traffic Navigating Entities*, 9,478,130, October 2016.

Society Memberships (Past and Present)

Editorial Board member of the *GARP Risk Professional*

Advisory Board of the Polytechnic Univ Center for Finance & Technology

Sigma Pi Sigma - National Physics Honor Society

(Senior Member) *Institute of Electrical and Electronic Engineers* (IEEE)

Sigma Xi (scientific research society)

IEEE *Election Devices Society*

Society for Industrial and Applied Mathematics (SIAM)

American Association for the Advancement of Science (AAAS)

Professional Activities and Honors

- 2014 Financial Risk Manager – Certified by the *Global Association of Risk Professionals*
- 1997 Passed the Series 7 and Series 63 General Securities Representative Examinations
- 1996 Member of the Polytechnic University Advisory Council of the Center for Technology & Financial Services
- 1991 Elected to *Senior Member* of the IEEE
- 1989 - 1992 Chairman of the *Annual Workshop on Mathematical Problems in Industry* at *Rensselaer Polytechnic Institute*
- 1988 - 1990 Chairman of the *Center for Integrated Electronics VLSI Seminar Series* at *Rensselaer Polytechnic Institute*
- 1986 (General Electric Research and Development Center) Dushman Award for “outstanding technical contributions” to the VLSI Program
- 1985 (*Rensselaer Polytechnic Institute*) Karen and Lester Gerhardt Prize awarded annually for the best Ph.D. thesis from the Schools of Science and Engineering
- 1985 (*Rensselaer Polytechnic Institute*) H. B. Huntington Prize awarded annually for the best research by a student in the Physics Department
- 1982 (General Electric Research and Development Center) Dushman Award for “outstanding technical contributions” to the CID Imager Program
- 1976 National Merit IBM Thomas J. Watson Scholarship
- 1976 New York State Regents Scholarship

APPENDIX B: Publications of the Past Ten Years, J. M. Pimbley

J. M. Pimbley, “Testing and Mapping an Empirical Exercise Boundary for the American Put Option,” *J. Derivatives*, Fall 2021.

J. M. Pimbley and D. A. McDevitt-Pimbley, “Optimal Testing in Semiconductor Manufacturing,” *IEEE Engineering Management Review* **48**(4), 174-80, <https://doi.org/10.1109/EMR.2020.3022620>, December 2020.

J. M. Pimbley, “Efficient Routines for CDO Loss Calculations”, *J. Structured Finance* **26**(1), 29-43, Spring 2020.

J. M. Pimbley and G. Phillips, “The Myer Ruling and its Limitations,” *Commercial Law Quarterly*, **34**(1), March-May 2020.

J. M. Pimbley, “Simple Correlated Binomial Portfolio Loss Distribution”, *J. Structured Finance* **25**(2), 75-86, Summer 2019.

J. M. Pimbley, “T-Vasicek Credit Portfolio Loss Distribution”, *J. Structured Finance* **24**(3), 65-78, Fall 2018.

J. M. Pimbley and G. Phillips, “Fix the VIX: Reducing Manipulation in the Volatility Index”, *Risk Intelligence*, April 2018.

J. M. Pimbley, “Bernoulli & Behavioral Finance: Both Wrong”, *GARP Quant Perspectives*, August 2017.

J. M. Pimbley, “Quantitative Finance on a Smartphone – II”, *GARP Quant Perspectives*, June 2017.

J. M. Pimbley, “Six Great Reasons YOU Should Learn to Code”, *GARP Quant Perspectives*, April 2017.

J. M. Pimbley, “Ratings Reform: Blasting the Business Model”, *GARP Quant Perspectives*, February 2017.

J. M. Pimbley, “Demonetization and the Real Value of Money”, *GARP Quant Perspectives*, January 2017.

J. M. Pimbley, “Today’s Pressing Problem in Quantitative Finance”, *GARP Quant Perspectives*, December 2016.

J. M. Pimbley, “Risk Culture: What Matters Most?”, *GARP Quant Perspectives*, October 2016.

J. M. Pimbley, “Mathematical Finance, Models, Simulation and Today’s Pressing Problem”, chapter in *TutORials in Operations Research*, ISBN 978-0-9843378-9-7, 2016.

J. M. Pimbley, “How to Become a Better Risk Manager: Uniting Experience with Imagination”, *GARP Quant Perspectives*, September 2016.

J. M. Pimbley, "SmartFinance: Quantitative Finance on a SmartPhone", *GARP Quant Perspectives*, August 2016.

J. M. Pimbley, "Better Measurements for CLO Equity Performance", *J. Structured Finance* 22(2), 24-30, Summer 2016.

J. M. Pimbley, "Think in Code, Young Risk Analyst!", *GARP Quant Perspectives*, June 2016.

J. M. Pimbley, "Rapid Monte Carlo Simulation", *GARP Quant Perspectives*, May 2016.

J. M. Pimbley, "Quant's View of Negative Interest Rates, Part: II", *GARP Quant Perspectives*, April 2016.

J. M. Pimbley, "Banking Basics: China and Its Alarming NPLs", *GARP Quant Perspectives*, March 2016.

J. M. Pimbley, "Liquidity Liberation for Mutual Funds", *GARP Quant Perspectives*, February 2016.

J. M. Pimbley, "How to Assess and Manage Credit Risk", *GARP Quant Perspectives*, January 2016.

J. M. Pimbley, "Mutuals should not over-promise on loan liquidity", *Creditflux*, January 2016.

J. M. Pimbley, "Before #BigData, Let's Confront #BadData", *GARP Quant Perspectives*, November 2015.

J. M. Pimbley, "Mortgage Madness", *GARP Quant Perspectives*, October 2015.

J. M. Pimbley, "A Flight Simulator for Financial Risk", *GARP Quant Perspectives*, August 2015.

J. M. Pimbley, "Greece, Black Holes and Banks' Ankles", *GARP Quant Perspectives*, July 2015.

J. M. Pimbley, "The Greatest Global Financial Risk", *GARP Quant Perspectives*, June 2015.

J. M. Pimbley, "Decisions: Life & Death on Wall Street", *GARP Quant Perspectives*, May 2015.

J. M. Pimbley, "A Quant's View of Negative Interest Rates", *GARP Quant Perspectives*, April 2015.

J. M. Pimbley, "Fixing Banking – Volcker Rule on Steroids", *GARP Quant Perspectives*, February 2015.

J. M. Pimbley, "Fixing Banking – Part II", *GARP Quant Perspectives*, January 2015.

J. M. Pimbley, "Fixing Banking – Part I", *GARP Quant Perspectives*, December 2014.

J. M. Pimbley, "A Bailout Plan to Increase Systemic Risk?", *GARP Quant Perspectives*, November 2014.

J. M. Pimbley, "Book Excerpt: Banking on Failure", *GARP Quant Perspectives*, October 2014.

J. M. Pimbley, "How to Build Disastrous Financial Models", *GARP Quant Perspectives*, September 2014.

J. M. Pimbley, "Banks and Political Bargains", *GARP Quant Perspectives*, August 2014.

J. M. Pimbley, "Are Systemically Important Banks Junk Credits?", *GARP Quant Perspectives*, July 2014.

J. M. Pimbley, "Monetary Policy Risk? Deflation!", *GARP Quant Perspectives*, June 2014.

J. M. Pimbley, "Benford's Law and the Risk of Financial Fraud", *Risk Professional*, 1-7, May 2014.

D. A. McDevitt-Pimbley and J. M. Pimbley, "Simplifying Expression for the Classical Bond Price-Yield Relationship", *Risk Professional*, 1-2, September 2013.

APPENDIX C: Litigation Testimony of the Past Four Years, J. M. Pimbley

- **Alleged Fraudulent Ratings of RMBS CDOs** – March 2017 to July 2023
Working with a law firm, I served as both subject matter and testifying expert to review documents and analyze credit rating practices for 2007-vintage CDOs of RMBS. I prepared expert analyses to support and defend discovery requests and reviewed expert reports. I submitted an affidavit, submitted an expert report, and gave expert deposition testimony for this case that then settled prior to trial.

2013-000515 and 2013-000698 *M&T Bank Corporation v. Moody's Investors Service, Inc.*; Supreme Court of the State of New York, County of Erie

- **Alleged Fraudulent Inducement of Bond Insurer** – June 2018 to 2022
Working with consulting colleagues and a law firm, I served as an expert to analyze claims that a bank sponsor of RMBS transactions breached warranties and induced fraudulently the participation of an insurer. I prepared an expert report and gave expert deposition testimony.

652914/2014 *Financial Guaranty Insurance Company v. Morgan Stanley ABS Capital I Inc. et. al.*; Supreme Court of the State of New York, County of New York

APPENDIX D: Database Extract of Alameda In-Use LOC



APPENDIX E: Database Queries to Extract Alameda In-Use LOC

```
select * from loc_interest_charges where account_id = 9 limit 2000
```

(This first query defines Alameda by the database account id of 9.)

```
select * from loc_interest_charges  
join  
accounts on loc_interest_charges.account_id = accounts.id  
where accounts.user_id =  
'auth0|5c7cfd86dd5dae18b1c00d6d'  
order by created_at asc limit 500
```

(This second query defines Alameda by the database user id of 'auth0|5c7cfd86dd5dae18b1c00d6d' which effectively aggregates Alameda sub-accounts. The results of the Alameda LOC extraction are identical for these first and second queries.)

APPENDIX F: Database Data Responsive to Appendix E Queries

id	account_id	created_at	principal	size	balance_change_id
1	9	10/7/2021	1,013,155,167	101,316	270805637
34	9	10/8/2021	1,076,249,008	107,625	270805639
67	9	10/9/2021	1,192,310,855	119,231	270805641
100	9	10/10/2021	1,117,453,985	111,745	270805643
133	9	10/11/2021	1,083,493,416	108,349	270805645
166	9	10/12/2021	1,086,485,345	108,649	270805647
199	9	10/13/2021	1,115,063,930	111,506	270805649
232	9	10/14/2021	1,057,938,653	105,794	270805651
265	9	10/15/2021	1,201,579,361	120,158	270805653
298	9	10/16/2021	1,169,036,265	116,904	270805655
331	9	10/17/2021	1,058,872,701	105,887	270805657
364	9	10/18/2021	1,093,677,492	109,368	270805659
397	9	10/19/2021	1,130,572,066	113,057	270805661
430	9	10/20/2021	1,077,128,292	107,713	270805663
463	9	10/21/2021	1,199,569,264	119,957	270805665
496	9	10/22/2021	1,063,753,204	106,375	270805667
529	9	10/23/2021	1,066,832,048	106,683	270805669
562	9	10/24/2021	1,130,681,402	113,068	270805671
595	9	10/25/2021	1,156,840,979	115,684	270805673
628	9	10/26/2021	1,120,999,998	112,100	270805675
661	9	10/27/2021	1,083,261,105	108,326	270805677
703	9	10/28/2021	1,079,673,995	107,967	270805679
737	9	10/29/2021	1,110,146,125	111,015	270805681
763	9	10/30/2021	1,119,146,337	111,915	270805683
804	9	10/31/2021	1,120,637,562	112,064	270805685
837	9	11/1/2021	1,121,461,124	112,146	270805687
865	9	11/2/2021	1,061,345,761	106,135	270805689
900	9	11/3/2021	1,015,855,193	101,586	270805691
938	9	11/4/2021	1,146,766,727	114,677	270805693
970	9	11/5/2021	1,082,911,760	108,291	270805695
1000	9	11/6/2021	1,181,770,957	118,177	270805697
1029	9	11/7/2021	1,086,531,747	108,653	270805699
1064	9	11/8/2021	1,137,036,140	113,704	270805701
1107	9	11/9/2021	1,142,822,013	114,282	270805703
1142	9	11/10/2021	1,069,787,858	106,979	270805705
1167	9	11/11/2021	1,047,549,630	104,755	270805707
1208	9	11/12/2021	1,122,824,809	112,282	270805709
1224	9	11/13/2021	1,187,631,032	118,763	270805711
1268	9	11/14/2021	1,087,487,675	108,749	270805713
1294	9	11/15/2021	1,134,059,563	113,406	270805715

1341	9	11/16/2021	1,105,371,577	110,537	270805717
1359	9	11/17/2021	1,087,231,327	108,723	270805719
1405	9	11/18/2021	1,009,717,998	100,972	270805721
1434	9	11/19/2021	1,191,307,272	119,131	270805723
1456	9	11/20/2021	1,097,154,843	109,715	270805725
1506	9	11/21/2021	1,178,171,527	117,817	270805727
2765	9	11/22/2021	1,141,056,739	114,106	270805729
2766	9	11/23/2021	1,108,798,901	110,880	270805731
2767	9	11/24/2021	1,025,895,602	102,590	270805733
2768	9	11/25/2021	1,068,785,724	106,879	270805735
2769	9	11/26/2021	1,192,382,507	119,238	270805737
2770	9	11/27/2021	1,206,757,698	120,676	270805739
2771	9	11/28/2021	1,011,335,640	101,134	270805741
2772	9	11/29/2021	1,132,006,629	113,201	270805743
2773	9	11/30/2021	1,099,792,621	109,979	270805745
2774	9	12/1/2021	1,157,260,973	115,726	270805747
2775	9	12/2/2021	1,043,457,794	104,346	270805749
2776	9	12/3/2021	1,154,713,564	115,471	270805751
2777	9	12/4/2021	1,184,869,928	118,487	270805753
2778	9	12/5/2021	1,030,085,457	103,009	270805755
2779	9	12/6/2021	1,103,221,010	110,322	270805757
2780	9	12/7/2021	1,124,837,104	112,484	270805759
2781	9	12/8/2021	1,182,090,893	118,209	270805761
2782	9	12/9/2021	1,163,791,001	116,379	270805763
2783	9	12/10/2021	1,153,652,322	115,365	270805765
2784	9	12/11/2021	1,166,438,439	116,644	270805767
2785	9	12/12/2021	1,199,061,010	119,906	270805769
2786	9	12/13/2021	1,155,295,803	115,530	270805771
2787	9	12/14/2021	1,084,309,159	108,431	270805773
2788	9	12/15/2021	1,159,974,373	115,997	270805775
2789	9	12/16/2021	1,063,605,773	106,361	270805777
2790	9	12/17/2021	1,054,702,437	105,470	270805779
2791	9	12/18/2021	1,065,653,581	106,565	270805781
2792	9	12/19/2021	1,147,995,512	114,800	270805783
2793	9	12/20/2021	1,174,858,789	117,486	270805785
2794	9	12/21/2021	1,080,937,155	108,094	270805787
2795	9	12/22/2021	1,169,757,213	116,976	270805789
2796	9	12/23/2021	1,111,707,413	111,171	270805791
2797	9	12/24/2021	1,023,649,232	102,365	270805793
2798	9	12/25/2021	1,175,633,566	117,563	270805795
2799	9	12/26/2021	1,100,740,650	110,074	270805797
2800	9	12/27/2021	1,133,127,070	113,313	270805799
2801	9	12/28/2021	1,087,024,165	108,702	270805801
2802	9	12/29/2021	1,134,992,035	113,499	270805803

2828	9	12/30/2021	950,649,837	95,065	272162547
2961	9	1/3/2022	999,193,312	99,919	282293455
2975	9	1/4/2022	1,020,161,606	102,016	305531047
3007	9	1/5/2022	893,158,336	89,316	308869541
3038	9	1/6/2022	1,072,821,042	107,282	312238247
3090	9	1/8/2022	1,108,007,178	110,801	319034829
3111	9	1/9/2022	1,130,737,265	113,074	322449529
3150	9	1/10/2022	1,256,781,589	125,678	325858118
3184	9	1/11/2022	1,230,694,235	123,069	329278856
3217	9	1/12/2022	1,296,049,619	129,605	332716692
3259	9	1/13/2022	1,305,442,019	130,544	336179765
3292	9	1/14/2022	1,675,215,105	167,522	339515540
3359	9	1/16/2022	1,710,501,557	171,050	346499096
3375	9	1/17/2022	1,663,960,801	166,396	350003744
3423	9	1/18/2022	1,608,513,706	160,851	353510617
3448	9	1/19/2022	1,555,649,203	155,565	357012679
3475	9	1/20/2022	1,686,445,225	168,645	360512576
3524	9	1/21/2022	1,916,468,586	191,647	364024567
3557	9	1/22/2022	1,914,096,701	191,410	367527627
3576	9	1/23/2022	1,908,513,415	190,851	370999217
3613	9	1/24/2022	2,202,862,005	220,286	374469067
3642	9	1/25/2022	2,011,299,152	201,130	377943109
3679	9	1/26/2022	2,039,018,089	203,902	381440137
3701	9	1/27/2022	2,121,319,728	212,132	384966670
3738	9	1/28/2022	1,930,560,000	193,056	388504426
3776	9	1/29/2022	1,905,884,221	190,588	392056793
3808	9	1/30/2022	1,978,520,730	197,852	395630969
3846	9	1/31/2022	1,998,649,289	199,865	399218642
3879	9	2/1/2022	1,998,825,633	199,883	402813026
3914	9	2/2/2022	1,953,458,712	195,346	406438021
3931	9	2/3/2022	1,933,657,264	193,366	410070974
3980	9	2/4/2022	1,967,997,798	196,800	413700480
4010	9	2/5/2022	2,129,224,798	212,922	417359529
4045	9	2/6/2022	2,151,165,323	215,117	421051223
4077	9	2/7/2022	2,150,819,627	215,082	424751623
4097	9	2/8/2022	2,402,355,610	240,236	428475974
4131	9	2/9/2022	2,358,717,871	235,872	432216622
4181	9	2/10/2022	2,121,890,873	212,189	435972816
4210	9	2/11/2022	2,152,790,938	215,279	439746983
4247	9	2/12/2022	2,089,857,868	208,986	443524132
4268	9	2/13/2022	2,168,786,086	216,879	447298067
4303	9	2/14/2022	2,141,401,808	214,140	451079545
4347	9	2/15/2022	2,199,107,708	219,911	454862104
4368	9	2/16/2022	2,053,794,604	205,379	458668057

4400	9	2/17/2022	2,303,859,486	230,386	462483050
4440	9	2/18/2022	2,191,929,287	219,193	466300011
4470	9	2/19/2022	2,267,294,592	226,729	470104921
4503	9	2/20/2022	2,259,036,654	225,904	473909212
4544	9	2/21/2022	2,179,079,399	217,908	477701227
4578	9	2/22/2022	1,944,019,378	194,402	481499969
4611	9	2/23/2022	1,995,972,826	199,597	485293571
4645	9	2/24/2022	2,063,524,640	206,352	489115994
4660	9	2/25/2022	2,140,081,103	214,008	492920753
4702	9	2/26/2022	2,177,108,662	217,711	496797704
4737	9	2/27/2022	2,215,981,573	221,598	500686357
4777	9	2/28/2022	2,050,133,436	205,013	504572958
4802	9	3/1/2022	2,212,752,958	221,275	508467206
4844	9	3/2/2022	2,206,899,397	220,690	512386067
4869	9	3/3/2022	2,151,185,730	215,119	516315479
4898	9	3/4/2022	2,119,673,780	211,967	520247851
4926	9	3/5/2022	2,076,174,761	207,617	524183967
4974	9	3/6/2022	2,131,921,986	213,192	528122656
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5099	9	3/10/2022	2,103,884,357	210,388	543954356
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5261	9	3/15/2022	2,062,784,267	206,278	563937077
5285	9	3/16/2022	2,263,140,135	226,314	567954313
5324	9	3/17/2022	2,374,925,704	237,493	571984618
5365	9	3/18/2022	1,988,021,666	198,802	576032190
5399	9	3/19/2022	2,221,771,676	222,177	580089323
5417	9	3/20/2022	1,924,461,651	192,446	584171481
5458	9	3/21/2022	2,093,485,395	209,349	588294012
5497	9	3/22/2022	2,094,605,158	209,461	592551319
5519	9	3/23/2022	2,158,468,948	215,847	596682953
5556	9	3/24/2022	2,307,467,761	230,747	600824848
5598	9	3/25/2022	2,304,087,377	230,409	604988844
5630	9	3/26/2022	2,143,291,826	214,329	609168807
5657	9	3/27/2022	2,308,257,326	230,826	613355851
5699	9	3/28/2022	2,424,895,296	242,490	617561566
5719	9	3/29/2022	2,436,520,737	243,652	621785928
5761	9	3/30/2022	2,481,228,667	248,123	626024174
5793	9	3/31/2022	2,457,271,748	245,727	630275582
5833	9	4/1/2022	2,407,457,380	240,746	634546711

5854	9	4/2/2022	2,426,152,025	242,615	638832415
5893	9	4/3/2022	2,538,350,170	253,835	643150189
5923	9	4/4/2022	2,579,932,669	257,993	647482965
5951	9	4/5/2022	2,613,287,589	261,329	651827590
5977	9	4/6/2022	2,422,761,343	242,276	656185131
6022	9	4/7/2022	2,593,997,283	259,400	660543270
6058	9	4/8/2022	2,603,727,756	260,373	664908929
6080	9	4/9/2022	2,501,341,821	250,134	669289326
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6139	9	1/1/2022	1,008,308,953	100,831	677888894
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6153	9	4/11/2022	2,496,979,523	249,698	678072198
6194	9	4/12/2022	2,420,724,639	242,072	682474835
6208	9	4/13/2022	2,397,453,392	239,745	686888977
6245	9	4/14/2022	2,361,740,707	236,174	691321172
6279	9	4/15/2022	2,416,382,625	241,638	695766800
6320	9	4/16/2022	2,417,266,578	241,727	700224207
6355	9	4/17/2022	2,399,573,188	239,957	704694968
6390	9	4/18/2022	2,035,701,735	203,570	709176332
6413	9	4/19/2022	2,102,633,580	210,263	713661356
6442	9	4/20/2022	2,084,835,912	208,484	718168629
6494	9	4/21/2022	2,135,005,942	213,501	723072924
6510	9	4/22/2022	2,105,508,435	210,551	727238292
6546	9	4/23/2022	2,121,767,540	212,177	731981570
6569	9	4/24/2022	2,110,216,721	211,022	736360017
6606	9	4/25/2022	2,117,187,408	211,719	740944740
6653	9	4/26/2022	2,158,749,870	215,875	745538299
6677	9	4/27/2022	2,143,753,426	214,375	750149777
6711	9	4/28/2022	2,278,194,229	227,819	754767980
6755	9	4/29/2022	2,125,435,719	212,544	759405658
6792	9	4/30/2022	1,878,907,107	187,891	764046089
6807	9	5/1/2022	1,840,335,352	184,034	768676628
6851	9	5/2/2022	1,962,650,401	196,265	773288446
6877	9	5/3/2022	1,942,658,344	194,266	777932795
6906	9	5/4/2022	1,988,816,825	198,882	782604289
6954	9	5/5/2022	2,073,703,492	207,370	787302931
6989	9	5/6/2022	1,969,795,537	196,980	792018215
7012	9	5/7/2022	1,826,511,779	182,651	796714499
7052	9	5/8/2022	1,835,772,917	183,577	801416705
7071	9	5/9/2022	1,591,408,112	159,141	806086815
7121	9	5/10/2022	1,860,100,141	186,010	810739942
7150	9	5/11/2022	1,794,089,605	179,409	815392369

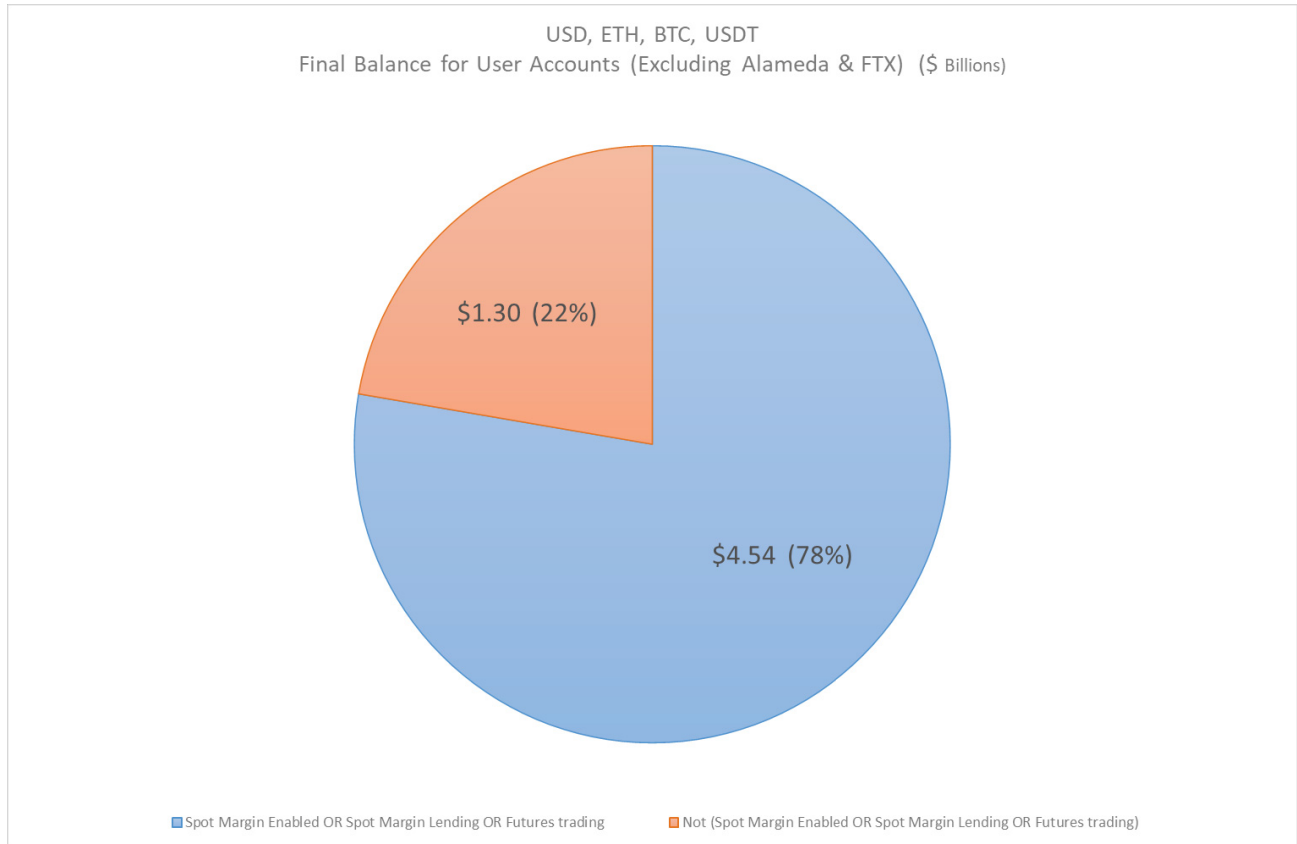
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7218	9	5/13/2022	3,066,945,121	306,695	824534159
7252	9	5/14/2022	3,023,705,380	302,371	829077876
7284	9	5/15/2022	3,052,783,907	305,278	833697460
7305	9	5/16/2022	3,032,055,248	303,206	838371338
7351	9	5/17/2022	2,908,896,539	290,890	843075485
7376	9	5/18/2022	2,786,865,512	278,687	847817057
7419	9	5/19/2022	2,723,745,972	272,375	852581476
7452	9	5/20/2022	2,828,078,608	282,808	857357566
7485	9	5/21/2022	2,877,596,128	287,760	862155265
7505	9	5/22/2022	2,860,232,934	286,023	866969832
7547	9	5/23/2022	2,926,003,537	292,600	871814893
7567	9	5/24/2022	2,955,908,691	295,591	876688078
7616	9	5/25/2022	2,949,714,220	294,971	881570347
7642	9	5/26/2022	2,878,398,850	287,840	886475120
7682	9	5/27/2022	2,819,371,780	281,937	891384827
7703	9	5/28/2022	2,586,946,222	258,695	896234543
7740	9	5/29/2022	2,613,054,692	261,305	901100743
7763	9	5/30/2022	2,679,606,157	267,961	906044185
7792	9	5/31/2022	2,848,141,714	284,814	911073561
7846	9	6/1/2022	2,820,903,475	282,090	916238881
7879	9	6/2/2022	2,775,122,850	277,512	921452680
7901	9	6/3/2022	2,855,055,039	285,506	926682294
7931	9	6/4/2022	2,821,203,225	282,120	931819328
7936	9	6/5/2022	2,854,842,230	285,484	936859438
7967	9	6/6/2022	2,896,791,960	289,679	941924818
7997	9	6/7/2022	2,847,801,328	284,780	947024483
8040	9	6/8/2022	2,862,134,424	286,213	952146384
8071	9	6/9/2022	2,824,789,754	282,479	957293475
8103	9	6/10/2022	2,887,537,526	288,754	962464396
8142	9	6/11/2022	2,887,286,299	288,729	967645757
8172	9	6/13/2022	2,750,710,148	275,071	977986758
8190	9	6/14/2022	2,444,078,406	244,408	983092479
8241	9	6/15/2022	1,652,036,413	165,204	988192235
8275	9	6/16/2022	1,490,818,360	149,082	993289717
8297	9	6/17/2022	1,188,564,241	118,856	998407939
8341	9	6/18/2022	1,209,275,314	120,928	1003530010
8373	9	6/19/2022	1,267,481,863	126,748	1008636646
8391	9	6/20/2022	1,440,633,486	144,063	1013748856
8430	9	6/21/2022	1,607,034,362	160,703	1018899876
8472	9	6/22/2022	1,726,017,049	172,602	1024090549
8506	9	6/23/2022	1,672,520,230	167,252	1029284703
8537	9	6/24/2022	1,646,222,078	164,622	1034508316
8564	9	6/25/2022	1,929,037,708	192,904	1039770412

8592	9	6/26/2022	1,880,724,653	188,072	1045058095
8622	9	6/27/2022	1,882,443,771	188,244	1050366096
8671	9	6/28/2022	1,986,701,448	198,670	1055684685
8689	9	6/29/2022	1,930,056,775	193,006	1061014740
8736	9	6/30/2022	1,761,173,880	176,117	1066347024
8762	9	7/1/2022	1,749,612,258	174,961	1071671474
8787	9	7/2/2022	1,713,457,820	171,346	1077015261
8823	9	7/3/2022	1,612,449,474	161,245	1082373210
8866	9	7/4/2022	1,514,370,123	151,437	1087745995
8895	9	7/5/2022	1,508,316,935	150,832	1093141912
8933	9	7/6/2022	1,447,120,311	144,712	1098560259
8970	9	7/7/2022	1,464,897,265	146,490	1103994683
8988	9	7/8/2022	1,616,866,014	161,687	1109458658
9028	9	7/9/2022	1,626,325,479	162,633	1114948496
9069	9	7/10/2022	1,728,774,942	172,877	1120465241
9102	9	7/11/2022	1,608,266,765	160,827	1125991992
9134	9	7/12/2022	1,574,960,456	157,496	1131523528
9167	9	7/14/2022	1,874,144,986	187,414	1142666657
9187	9	7/16/2022	1,669,624,431	166,962	1153939586
9255	9	7/20/2022	1,876,712,573	187,671	1176938132
9293	9	7/21/2022	2,100,095,038	210,010	1182773390
9333	9	7/26/2022	1,614,116,802	161,412	1212184833
9366	9	7/28/2022	1,690,860,948	169,086	1224024376
9384	9	8/1/2022	2,050,410,120	205,041	1248179310
9418	9	8/4/2022	1,911,429,567	191,143	1266507669
9460	9	8/8/2022	2,121,172,962	212,117	1291318061
9499	9	8/17/2022	2,467,164,992	246,716	1348340304
9527	9	8/20/2022	2,158,832,618	215,883	1367729735
9563	9	8/27/2022	2,195,591,038	219,559	1413654715
9600	9	8/28/2022	2,207,487,028	220,749	1420193513
9632	9	8/29/2022	2,244,818,810	224,482	1426988493
9666	9	8/30/2022	2,102,941,298	210,294	1433555594
9699	9	8/31/2022	2,122,412,832	212,241	1440151942
9732	9	9/1/2022	2,127,760,819	212,776	1446489247
9765	9	9/2/2022	2,157,012,742	215,701	1453573210
9798	9	9/3/2022	2,137,554,701	213,755	1459870350
9830	9	9/4/2022	2,148,148,650	214,815	1467354362
9864	9	9/5/2022	2,132,647,444	213,265	1474034889
9897	9	9/6/2022	2,266,299,078	226,630	1480469412
9927	9	9/7/2022	2,371,955,618	237,196	1487444722
9962	9	9/8/2022	2,567,810,799	256,781	1494151095
9995	9	9/9/2022	2,636,053,594	263,605	1500884746
10028	9	9/10/2022	2,731,799,364	273,180	1507668395
10060	9	9/11/2022	2,820,432,083	282,043	1514467822

10088	9	9/12/2022	2,865,191,445	286,519	1521293976
10127	9	9/13/2022	2,868,886,575	286,889	1528125823
10161	9	9/14/2022	2,927,895,660	292,790	1534982873
10193	9	9/15/2022	3,007,027,262	300,703	1541812013
10226	9	9/16/2022	2,934,330,496	293,433	1548641432
10259	9	9/17/2022	2,896,697,439	289,670	1555535404
10292	9	9/18/2022	2,933,556,884	293,356	1562715915
10323	9	9/19/2022	3,042,085,891	304,209	1569931091
10357	9	9/20/2022	3,172,551,426	317,255	1577139871
10387	9	9/21/2022	3,134,558,739	313,456	1584376929
10425	9	9/22/2022	3,195,139,620	319,514	1591627249
10458	9	9/23/2022	3,349,416,722	334,942	1598885249
10482	9	9/24/2022	3,443,717,304	344,372	1606175470
10523	9	9/25/2022	3,455,592,976	345,559	1613529840
10557	9	9/26/2022	3,519,227,603	351,923	1620933493
10772	9	9/27/2022	3,644,093,019	364,409	1628316949
11018	9	9/28/2022	3,636,372,878	363,637	1635768525
11274	9	9/29/2022	3,910,875,394	391,088	1643198102
11652	9	9/30/2022	3,865,348,600	386,535	1650674670
12067	9	10/1/2022	4,233,677,733	423,368	1658171609
12250	9	10/2/2022	4,227,866,365	422,787	1665698146
12674	9	10/3/2022	4,052,458,523	405,246	1673209549
13158	9	10/4/2022	4,231,539,657	423,154	1680723838
13284	9	10/5/2022	4,422,189,208	442,219	1687963353
13647	9	10/6/2022	4,368,434,766	436,843	1695831117
13965	9	10/7/2022	4,332,098,316	433,210	1703402942
14391	9	10/8/2022	4,136,992,255	413,699	1710978101
14638	9	10/9/2022	4,257,469,224	425,747	1718253161
14869	9	10/10/2022	4,298,227,664	429,823	1726188918
15397	9	10/11/2022	4,180,691,810	418,069	1733824834
15619	9	10/12/2022	4,466,911,054	446,691	1741459356
16105	9	10/13/2022	4,239,707,696	423,971	1748805436
16407	9	10/14/2022	4,521,266,247	452,127	1756784436
16611	9	10/15/2022	4,100,731,950	410,073	1764457821
17019	9	10/16/2022	4,075,772,046	407,577	1772055064
17431	9	10/17/2022	4,165,693,245	416,569	1779866797
17516	9	10/18/2022	4,567,528,683	456,753	1787563529
17942	9	10/19/2022	4,244,876,139	424,488	1795370873
18277	9	10/20/2022	4,228,436,515	422,844	1803131611
18678	9	10/21/2022	4,244,169,290	424,417	1810886228
18946	9	10/22/2022	4,308,068,288	430,807	1818675100
19340	9	10/23/2022	4,315,756,580	431,576	1826508457
19712	9	10/24/2022	4,392,956,086	439,296	1834332465
20078	9	10/25/2022	4,360,429,772	436,043	1842172122

20409	9	10/26/2022	4,565,937,902	456,594	1850039105
20809	9	10/27/2022	4,904,485,372	490,449	1857962829
21193	9	10/28/2022	4,705,623,788	470,562	1865896712
21563	9	10/29/2022	4,465,572,810	446,557	1873865187
21767	9	10/30/2022	4,634,569,516	463,457	1881881706
22204	9	10/31/2022	4,541,169,524	454,117	1889893588
22531	9	11/1/2022	4,650,446,862	465,045	1897916502
23009	9	11/2/2022	3,977,715,859	397,772	1905949470
23391	9	11/3/2022	3,671,238,960	367,124	1913991215
23655	9	11/4/2022	3,552,424,992	355,242	1921708882
23996	9	11/5/2022	3,479,746,032	347,975	1930105193
24359	9	11/6/2022	3,478,976,093	347,898	1938239414
24695	9	11/7/2022	3,814,237,497	381,424	1946218659
25088	9	11/8/2022	3,954,011,416	395,401	1953260656
25428	9	11/9/2022	3,577,433,487	357,743	1960243447
25824	9	11/10/2022	3,229,536,679	322,954	1966070486
26063	9	11/11/2022	3,544,818,248	354,482	1971307616
26092	9	11/12/2022	3,724,955,417	372,496	1972579412

APPENDIX G: Sum of Fair Values All Accounts Excluding Alameda and FTX for the Coins USD, BTC, ETH, and USDT



APPENDIX H: Database Queries for the Chart of Appendix G

```

SELECT SUM(size *coins.approx_fair) FROM public.balances
JOIN
coins on coin_id=coins.id
WHERE
coin_id IN (1,43,44,45)
AND
account_id NOT IN (9,1266726,1283114,1283148,1300590, ... [truncated])

```

notional

5,842,162,373.12

```

SELECT SUM(size *coins.approx_fair) as notional FROM public.balances
JOIN
coins on coin_id=coins.id
JOIN
accounts on account_id =accounts.id
WHERE
coin_id IN (1,43,44,45)
AND
(accounts.spot_margin_enabled =TRUE OR
accounts.spot_margin_lending_enabled =TRUE OR
account_id IN ( SELECT DISTINCT(account_id) FROM public.positions
WHERE net_size != 0))
AND
account_id NOT IN (9,1266726,1283114,1283148,1300590, ... [truncated])

```

notional

4,539,524,208.32

All Accounts	5,842,162,373.12	
Spot Margin Enabled OR Spot Margin Lending OR Futures trading	4,539,524,208.32	78%
Not (Spot Margin Enabled OR Spot Margin Lending OR Futures trading)	1,302,638,164.80	22%

In Billions

Spot Margin Enabled OR Spot Margin Lending OR Futures trading	\$4.54
Not (Spot Margin Enabled OR Spot Margin Lending OR Futures trading)	\$1.30

APPENDIX I: Alameda and FTX accounts

Alameda accounts definition from GX-1005

Sources: FTX.com database tables: accounts

id	username	user_id
9	info@alameda-research.com	auth0 5c7cfd86dd5dae18b1c00d6d
1266726	info@alameda-research.com/USDTsub	auth0 5c7cfd86dd5dae18b1c00d6d
1283114	info@alameda-research.com:bfut	bfut:auth0 5d175d35e7346b0d1a1a92af
1283148	info@alameda-research.com:bfut/test	bfut:auth0 5d175d35e7346b0d1a1a92af
1300590	info@alameda-research.com/_ftt_ieo	auth0 5c7cfd86dd5dae18b1c00d6d
1336528	info@alameda-research.com/_ftt_community_ieo	auth0 5c7cfd86dd5dae18b1c00d6d
1346422	info@alameda-research.com/test_sub	auth0 5c7cfd86dd5dae18b1c00d6d
1405310	cottongrovetrading@gmail.com	auth0 5d3dbf27d9b2110c9203b4d8
1417074	info@alameda-research.com/off_market_ftt	auth0 5c7cfd86dd5dae18b1c00d6d
1418145	cottongrovetrading@gmail.com/off_market_ftt	auth0 5d3dbf27d9b2110c9203b4d8
1505967	info@alameda-research.com/liquidation	auth0 5c7cfd86dd5dae18b1c00d6d
1561778	info@alameda-research.com/Battle Royale	auth0 5c7cfd86dd5dae18b1c00d6d
1681475	info@alameda-research.com/_t_deleted_nzdwfnbcyqbx	auth0 5c7cfd86dd5dae18b1c00d6d
1763857	info@alameda-research.com/TOMO-COMPETITION	auth0 5c7cfd86dd5dae18b1c00d6d
1878641	info@alameda-research.com/highleverage	auth0 5c7cfd86dd5dae18b1c00d6d
2056478	info@alameda-research.com/voucher	auth0 5c7cfd86dd5dae18b1c00d6d
2062292	info@alameda-research.com/PAXG Competition	auth0 5c7cfd86dd5dae18b1c00d6d
2137942	info@alameda-research.com/HC Capital Competition	auth0 5c7cfd86dd5dae18b1c00d6d
3244047	spot_fees_pnl	
3285306	info@alameda-research.com/trabby	auth0 5c7cfd86dd5dae18b1c00d6d
3449798	info@alameda-research.com/hxro_interest	auth0 5c7cfd86dd5dae18b1c00d6d
3749474	info@alameda-research.com/wBTC	auth0 5c7cfd86dd5dae18b1c00d6d
3869052	token_group_counterparty	
3880629	ventures@alameda-research.com	auth0 5f1a64d08ee8980019f7e0a6
4337419	info@alameda-research.com/SRM-IEO	auth0 5c7cfd86dd5dae18b1c00d6d
4437702	serum_minter	
4901462	msrm	
5279967	info@alameda-research.com/Investments	auth0 5c7cfd86dd5dae18b1c00d6d
5594671	info@alameda-research.com/LockedSOL	auth0 5c7cfd86dd5dae18b1c00d6d
5728138	expenses@projectserum.com	user expenses@projectserum.com
5936983	info@alameda-research.com/twap	auth0 5c7cfd86dd5dae18b1c00d6d
6343045	staking_payer_SRM	
6343062	staking_payer_MSRM	
6343079	staking_payer_SRM_LOCKED	
6343096	staking_payer_MSRM_LOCKED	

6343113	staking_payer_UBXT	
6600476	info@alameda-research.com/b_l_part_1	auth0 5c7cf86dd5dae18b1c00d6d
6600493	info@alameda-research.com/b_l_part_2	auth0 5c7cf86dd5dae18b1c00d6d
6600612	info@alameda-research.com/b_l_part_3	auth0 5c7cf86dd5dae18b1c00d6d
6723607	ftx@cryptolotus.com	user ftx@cryptolotus.com
6740624	info@alameda-research.com/OMG	auth0 5c7cf86dd5dae18b1c00d6d
6879803	info@alameda-research.com/b_l_part_4	auth0 5c7cf86dd5dae18b1c00d6d
6880466	maps_unlocker	
6884597	srm_unlocker	
6888677	fida_unlocker	
7020053	ventures@alameda-research.com/investments	auth0 5f1a64d08ee8980019f7e0a6
7184698	staking_payer_FIDA	
7278419	info@alameda-research.com/private1	auth0 5c7cf86dd5dae18b1c00d6d
7527605	reverted_locked_rewards	
8311611	info@alameda-research.com/test	auth0 5c7cf86dd5dae18b1c00d6d
8857022	info@alameda-research.com/spot_fee_otc	auth0 5c7cf86dd5dae18b1c00d6d
11149421	info@alameda-research.com/_REN1_deleted_hvlpaggaics	auth0 5c7cf86dd5dae18b1c00d6d
12889422	info@alameda-research.com/_REN2_deleted_peubfbfgaud	auth0 5c7cf86dd5dae18b1c00d6d
12993530	info@alameda-research.com/_REN3_deleted_yvuanyqzmwpw	auth0 5c7cf86dd5dae18b1c00d6d
13026748	info@alameda-research.com/borrowing_1	auth0 5c7cf86dd5dae18b1c00d6d
13131366	staking_payer_SOL	
13203973	info@alameda-research.com/_RENhello_deleted_shgpkuzgwivl	auth0 5c7cf86dd5dae18b1c00d6d
13252933	expenses@projectserum.com/srm_for_ftt_stakers	user expenses@projectserum.com
13642862	info@alameda-research.com/REN2delete	auth0 5c7cf86dd5dae18b1c00d6d
14525621	media_unlocker	
14582503	paypal	
15097144	staking_payer_RAY	
17196933	info@alameda-research.com/linadelivery	auth0 5c7cf86dd5dae18b1c00d6d
17494773	info@alameda-research.com/_lina2_deleted_polotofhrfvo	auth0 5c7cf86dd5dae18b1c00d6d
17568400	info@alameda-research.com/OMGdelivery	auth0 5c7cf86dd5dae18b1c00d6d
17779200	info@alameda-research.com/mob_sub	auth0 5c7cf86dd5dae18b1c00d6d
17799328	info@alameda-research.com/mob_borrow	auth0 5c7cf86dd5dae18b1c00d6d
18117279	info@alameda-research.com/2021_q1_closeout	auth0 5c7cf86dd5dae18b1c00d6d
18121597	aave_lend_conversion	
18132460	info@alameda-research.com/spl-bridge	auth0 5c7cf86dd5dae18b1c00d6d
18709797	info@alameda-research.com/lina3	auth0 5c7cf86dd5dae18b1c00d6d
19033188	info@alameda-research.com/lina4	auth0 5c7cf86dd5dae18b1c00d6d
19152885	info@alameda-research.com/oxy	auth0 5c7cf86dd5dae18b1c00d6d
20128651	info@alameda-research.com/ramp	auth0 5c7cf86dd5dae18b1c00d6d
25362441	info@alameda-research.com/non_usd_convert	auth0 5c7cf86dd5dae18b1c00d6d
25879326	info@alameda-research.com/mer_ieo	auth0 5c7cf86dd5dae18b1c00d6d

26020103	info@alameda-research.com/otc_portal_fees	auth0 5c7cfd86dd5dae18b1c00d6d
26099221	info@alameda-research.com/new_sub	auth0 5c7cfd86dd5dae18b1c00d6d
26514344	cottongrovetrading@gmail.com/pyth_deposit	auth0 5d3dbf27d9b2110c9203b4d8
26697162	info@alameda-research.com/SHIB	auth0 5c7cfd86dd5dae18b1c00d6d
26997688	info@alameda-research.com/neg_acc	auth0 5c7cfd86dd5dae18b1c00d6d
29480759	info@alameda-research.com/alameda_pyth_presale	auth0 5c7cfd86dd5dae18b1c00d6d
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31029748	info@alameda-research.com/slrs_ieo	auth0 5c7cfd86dd5dae18b1c00d6d
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35177867	info@alameda-research.com/a105_sollet8	auth0 5c7cfd86dd5dae18b1c00d6d
35177884	info@alameda-research.com/a104_sollet9	auth0 5c7cfd86dd5dae18b1c00d6d
37299688	info@alameda-research.com/new_coin	auth0 5c7cfd86dd5dae18b1c00d6d
37802225	info@alameda-research.com/atlas_ieo	auth0 5c7cfd86dd5dae18b1c00d6d
41590964	paper_bird	
43583925	info@alameda-research.com/serum13	auth0 5c7cfd86dd5dae18b1c00d6d
43584027	info@alameda-research.com/LFG Aidrop for FTX	auth0 5c7cfd86dd5dae18b1c00d6d
43584095	info@alameda-research.com/serum15	auth0 5c7cfd86dd5dae18b1c00d6d
47859272	info@alameda-research.com/BNB_king	auth0 5c7cfd86dd5dae18b1c00d6d
47859935	info@alameda-research.com/BNB_finfinty	auth0 5c7cfd86dd5dae18b1c00d6d
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49547729	info@alameda-research.com/wbtc	auth0 5c7cfd86dd5dae18b1c00d6d
49735868	info@alameda-research.com/reassigned	auth0 5c7cfd86dd5dae18b1c00d6d
55987924	mega	
56416426	expenses@projectserum.com/ief	user expenses@projectserum.com
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58406497	info@alameda-research.com/aa2	auth0 5c7cfd86dd5dae18b1c00d6d
58406786	info@alameda-research.com/aa3	auth0 5c7cfd86dd5dae18b1c00d6d
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62106700	expenses@projectserum.com/ief_investments	user expenses@projectserum.com
62433015	info@alameda-research.com/ok	auth0 5c7cfd86dd5dae18b1c00d6d
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66450761	info@alameda-research.com/binance_fee_account	auth0 5c7cfd86dd5dae18b1c00d6d
67618712	info@alameda-research.com/PerpMarginSub	auth0 5c7cfd86dd5dae18b1c00d6d
72669361	info@alameda-research.com/sol_loan	auth0 5c7cfd86dd5dae18b1c00d6d
72669531	sol_loan	

73281939	paperbird@ftx.com	user paperbird@ftx.com
76425239	info@alameda-research.com/rndr	auth0 5c7cfd86dd5dae18b1c00d6d
77319762	info@alameda-research.com/_do_not_reuse_deleted_ihxetoxchopc	auth0 5c7cfd86dd5dae18b1c00d6d
79442858	info@alameda-research.com/psy_ieo	auth0 5c7cfd86dd5dae18b1c00d6d
79947690	info@alameda-research.com/a219	auth0 5c7cfd86dd5dae18b1c00d6d
81290078	info@alameda-research.com/steth	auth0 5c7cfd86dd5dae18b1c00d6d
81295093	info@alameda-research.com/steth2	auth0 5c7cfd86dd5dae18b1c00d6d
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81969670	info@alameda-research.com/a202	auth0 5c7cfd86dd5dae18b1c00d6d
81971761	info@alameda-research.com/a211	auth0 5c7cfd86dd5dae18b1c00d6d
83041877	info@alameda-research.com/a274	auth0 5c7cfd86dd5dae18b1c00d6d
83064691	info@alameda-research.com/a93	auth0 5c7cfd86dd5dae18b1c00d6d
83123477	info@alameda-research.com/_1_deleted_kdkfevplnovv	auth0 5c7cfd86dd5dae18b1c00d6d
83256434	info@alameda-research.com/promotion	auth0 5c7cfd86dd5dae18b1c00d6d
84094772	info@alameda-research.com/blizzcollateral	auth0 5c7cfd86dd5dae18b1c00d6d
84703712	info@alameda-research.com/test_01	auth0 5c7cfd86dd5dae18b1c00d6d
86637717	info@alameda-research.com/a215	auth0 5c7cfd86dd5dae18b1c00d6d
87449433	info@alameda-research.com/a203	auth0 5c7cfd86dd5dae18b1c00d6d
87541777	info@alameda-research.com/FTXTR	auth0 5c7cfd86dd5dae18b1c00d6d
91678064	info@alameda-research.com/a208	auth0 5c7cfd86dd5dae18b1c00d6d
93297688	info@alameda-research.com/_a106_deleted_hxqqevnzkgbe	auth0 5c7cfd86dd5dae18b1c00d6d
95199495	info@alameda-research.com/mertwap	auth0 5c7cfd86dd5dae18b1c00d6d
96267979	expenses@projectserum.com/ief_inevstor_disbursements	user expenses@projectserum.com
96743333	info@alameda-research.com/a213	auth0 5c7cfd86dd5dae18b1c00d6d
96847730	info@alameda-research.com/a220	auth0 5c7cfd86dd5dae18b1c00d6d
96858423	info@alameda-research.com/bf_reward_payments	auth0 5c7cfd86dd5dae18b1c00d6d
97234922	info@alameda-research.com/indi_ieo_ticket_payout	auth0 5c7cfd86dd5dae18b1c00d6d
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161551294	info@alameda-research.com/stable_sub_sig	auth0 5c7cfd86dd5dae18b1c00d6d
161653855	info@alameda-research.com/sol_staking02	auth0 5c7cfd86dd5dae18b1c00d6d
161666197	info@alameda-research.com/anon_03	auth0 5c7cfd86dd5dae18b1c00d6d

FTX accounts

```
SELECT * FROM public.accounts WHERE user_id IS NULL
```

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1263428	USDTHEDGE_credemption
1263411	USDTBULL_credemption
1263479	EOSHEDGE_credemption
1263530	XRPHEEDGE_credemption
1263377	ETHHEDGE_credemption
1493948	BCHDOOM
1263445	USDTBEAR_credemption
1263547	XRPBEAR_credemption
1263394	ETHBEAR_credemption
1263513	XRPBULL_credemption
1263326	HEDGE_credemption
1263343	BEAR_credemption
1263309	BULL_credemption
1263462	EOSBULL_credemption
1263360	ETHBULL_credemption
1263496	EOSBEAR_credemption
1268018	BNBHEDGE_credemption
1268120	TRXHEDGE_credemption

1268154	TRXBEAR_credemption
1267984	BNBBULL_credemption
1268052	BNBBEAR_credemption
1268086	TRXBULL_credemption
1262969	XRP1NX
1262901	EOS3X
5	ETH1NX
1262850	USDT3X
1262918	EOS1NX
1262867	USDT1NX
1	BTC3X
4	ETH3X
1262935	EOS3NX
2	BTC1NX
1274478	LEOBULL
1268035	BNBBEAR
6	ETH3NX
1262952	XRP3X
1262884	USDT3NX
1268069	TRXBULL
1262986	XRP3NX
3	BTC3NX
1268137	TRXBEAR
1268001	BNBHEDGE
1268103	TRXHEDGE
1267967	BNBBULL
-10	funding_payments_fix_20190530
1274512	LEOHEDGE
1274529	LEOHEDGE_credemption
1274495	LEOBULL_credemption
1274563	LEOBEAR_credemption
1274546	LEOBEAR
1278116	BCHBULL
1278184	BCHBEAR
1278167	BCHHEDGE_credemption
1278150	BCHHEDGE
1278133	BCHBULL_credemption
1278201	BCHBEAR_credemption
1279442	ALGOHEDGE
1279459	ALGOHEDGE_credemption
1279408	ALGOBULL
1279476	ALGOBEAR
1279493	ALGOBEAR_credemption
1279425	ALGOBULL_credemption

1283318	LTCHEEDGE_credemption
1283267	LTCBULL
1283301	LTCHEEDGE
1283335	LTCBEAR
1283284	LTCBULL_credemption
1283352	LTCBEAR_credemption
1288248	BSVHEDGE
1288265	BSVHEDGE_credemption
1288282	BSVBEAR
1288214	BSVBULL
1288231	BSVBULL_credemption
1288299	BSVBEAR_credemption
1292175	ALTBULL
1292209	ALTHEDGE
1292226	ALTHEDGE_credemption
1292192	ALTBULL_credemption
1292243	ALTBEAR
1292260	ALTBEAR_credemption
1328538	MIDBEAR
1328504	MIDHEDGE
1328487	MIDBULL_credemption
1328470	MIDBULL
1328521	MIDHEDGE_credemption
1328555	MIDBEAR_credemption
1356044	SHITBULL
1356078	SHITHEDGE
1356112	SHITBEAR
1356129	SHITBEAR_credemption
1356095	SHITHEDGE_credemption
1356061	SHITBULL_credemption
1411107	ftt_unlocker
1411124	ftt_cold
1427274	usdt20190731
1459540	HTBULL
1462311	OKBHEDGE
1462328	OKBHEDGE_credemption
1462345	OKBBEAR
1462362	OKBBEAR_credemption
1462294	OKBBULL_credemption
1462277	OKBBULL
1459591	HTHEDGE_credemption
1459574	HTHEDGE
1459608	HTBEAR
1459557	HTBULL_credemption

1459625	HTBEAR_credemption
1474653	EXCHBEAR
1471321	extra_realized_pnl
1471457	double_counted_high_lev_fees
1493965	BCHDOOM_credemption
1493982	ALGOMOON
1494016	ALGODOOM
1493999	ALGOMOON_credemption
1494033	ALGODOOM_credemption
1494050	LTCMOON
1474585	EXCHBULL
1474619	EXCHHEDGE
1474636	EXCHHEDGE_credemption
1474602	EXCHBULL_credemption
1474687	ETCBULL
1474721	ETCHEDGE
1474738	ETCHEDGE_credemption
1474755	ETCBEAR
1474704	ETCBULL_credemption
1474772	ETCBEAR_credemption
1474670	EXCHBEAR_credemption
1494067	LTCMOON_credemption
1494084	LTCDOOM
1494101	LTCDOOM_credemption
1494118	BSVMOON
1494169	BSVDOOM_credemption
1494186	ALTMOON
1494135	BSVMOON_credemption
1494152	BSVDOOM
1494203	ALTMOON_credemption
1494237	ALTDOOM_credemption
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1494220	ALTDOOM
1494288	MIDDOOM
1494254	MIDMOON
1494322	MOONSHIT
1494305	MIDDOOM_credemption
1494339	MOONSHIT_credemption
1494356	DOOMSHIT
1494373	DOOMSHIT_credemption
1494407	HTMOON_credemption
1494390	HTMOON
1494424	HTDOOM
1494441	HTDOOM_credemption

1494458	OKBMOON
1494492	OKBDOOM
1494475	OKBMOON_credemption
1494509	OKBDOOM_credemption
1494526	EXCHMOON
1494543	EXCHMOON_credemption
1494560	EXCHDOOM
1494577	EXCHDOOM_credemption
1494594	ETCMOON
1494611	ETCMOON_credemption
1494628	ETCDOOM
1494645	ETCDOOM_credemption
1493370	MOON
1493387	MOON_credemption
1493404	DOOM
1493438	ETHMOON
1493421	DOOM_credemption
1493455	ETHMOON_credemption
1493472	ETHDOOM
1493489	ETHDOOM_credemption
1493506	USDTMOON
1493540	USDTDOOM
1493523	USDTMOON_credemption
1493591	EOSMOON_credemption
1493574	EOSMOON
1493557	USDTDOOM_credemption
1493608	EOSDOOM
1493625	EOSDOOM_credemption
1493642	XRPMOON
1493676	XRPDOOM
1493659	XRPMOON_credemption
1493693	XRPDOOM_credemption
1493710	BNBMOON
1493744	BNBDOOM
1493761	BNBDOOM_credemption
1493727	BNBMOON_credemption
1493829	TRXDOOM_credemption
1493778	TRXMOON
1493846	LEOMOON
1493795	TRXMOON_credemption
1493812	TRXDOOM
1493863	LEOMOON_credemption
1493880	LEODOOM
1493897	LEODOOM_credemption

1493914	BCHMOON
1493931	BCHMOON_credemption
1613849	LINKMOON
1635116	DOGEMOON
1635133	DOGEMOON_credemption
1635150	DOGEBULL
1635184	DOGEHEDGE
1635201	DOGEHEDGE_credemption
1635218	DOGEBEAR
1635235	DOGEBEAR_credemption
1635252	DOGEDOOM
1635269	DOGEDOOM_credemption
1635167	DOGEBULL_credemption
1613883	LINKBULL
1613917	LINKHEDGE
1613934	LINKHEDGE_credemption
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1613985	LINKDOOM
1613866	LINKMOON_credemption
1614002	LINKDOOM_credemption
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1638686	MATICHEDGE_credemption
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1638720	MATICBEAR_credemption
1638703	MATICBEAR
1638737	MATICDOOM
1638754	MATICDOOM_credemption
1638652	MATICBULL_credemption
1642630	ADAMOON
1645656	BTMXMOON
1645673	BTMXMOON_credemption
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1645741	BTMXHEDGE_credemption
1645690	BTMXBULL
1645758	BTMXBEAR
1645707	BTMXBULL_credemption
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1645792	BTMXDOOM
1645775	BTMXBEAR_credemption
1642664	ADABULL

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1642749	ADABEAR_credemption
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1642783	ADADOOM_credemption
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1661687	DRGNBEAR_credemption
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1750342	ATOMBULL_credemption
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1750376	ATOMHEDGE_credemption
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1729109	TOMOBEAR
1729160	TOMODOOM_credemption
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1729058	TOMOBULL_credemption
1729126	TOMOBEAR_credemption
1793573	XTZMOON
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1849554	TRYBBULL_credemption
1849588	TRYBHEDGE_credemption
1849622	TRYBBEAR_credemption
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1957878	PAXGBEAR
1957827	PAXGBULL_credemption
1957861	PAXGHEDGE_credemption
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2250805	PRIVBEAR_credemption
2250788	PRIVBEAR
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2482583	XAUTHEDGE
2482600	XAUTHEDGE_credemption
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2482566	XAUTBULL_credemption
2482634	XAUTBEAR_credemption
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2567957	BTCS3
2567974	BTCS3_credemption
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2568059	BSVL3
2568076	BSVL3_credemption
2568093	BSVS3
2568110	BSVS3_credemption

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2860085	HALF_credemption
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2860119	ETHHALF_credemption
2860136	USDTHALF
2860153	USDTHALF_credemption
2860170	EOSHALF
2860204	XRPHALF
2860221	XRPHALF_credemption
2860238	BNBHALF
2860255	BNBHALF_credemption
2860272	TRXHALF
2860289	TRXHALF_credemption
2860306	LEOHALF
2860323	LEOHALF_credemption
2860340	BCHHALF
2860357	BCHHALF_credemption
2860374	ALGOHALF
2860391	ALGOHALF_credemption
2860408	LTCHALF
2860425	LTCHALF_credemption
2860442	BSVHALF
2860459	BSVHALF_credemption
2860476	ALTHALF
2860493	ALTHALF_credemption
2860510	MIDHALF
2860527	MIDHALF_credemption
2860544	HALFSHIT
2860561	HALFSHIT_credemption
2860578	HTHALF
2860595	HTHALF_credemption
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2860646	EXCHHALF
2860663	EXCHHALF_credemption
2860680	ETCHALF
2860697	ETCHALF_credemption
2860714	LINKHALF
2860731	LINKHALF_credemption
2860748	DOGEHALF
2860765	DOGEHALF_credemption
2860782	MATICHALF
2860799	MATICHALF_credemption
2860816	ADAHALF

2860833	ADAHALF_credemption
2860850	BTMXHALF
2860867	BTMXHALF_credemption
2860901	DRGNHALF_credemption
2860918	TOMOHALF
2860935	TOMOHALF_credemption
2860952	ATOMHALF
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2860986	XTZHALF
2861003	XTZHALF_credemption
2861020	TRYBHALF
2861037	TRYBHALF_credemption
2861054	PAXGHALF
2861071	PAXGHALF_credemption
2861088	PRIVHALF
2861105	PRIVHALF_credemption
2861122	XAUTHALF
2861139	XAUTHALF_credemption
2918038	IBVOL
2918004	BVOL
2918055	IBVOL_credemption
2918021	BVOL_credemption
2860884	DRGNHALF
2860187	EOSHALF_credemption
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3214926	THETABULL_credemption
3214943	THETAHEDGE
3214960	THETAHEDGE_credemption
3214977	THETABEAR
3214994	THETABEAR_credemption
3215011	THETAHALF
3215028	THETAHALF_credemption
3244047	spot_fees_pnl
3346540	KNCBULL
3346557	KNCBULL_credemption
3346574	KNCHEDGE
3346591	KNCHEDGE_credemption
3346625	KNCBEAR_credemption
3346642	KNCHALF
3346659	KNCHALF_credemption
3346608	KNCBEAR
3416291	DEFIBULL
3416308	DEFIBULL_credemption

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3416393	DEFIHALF
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3650738	MKRBULL_credemption
3650755	MKRHEDGE
3650772	MKRHEDGE_credemption
3650789	MKRBEAR
3650806	MKRBEAR_credemption
3650823	MKRHALF
3650840	MKRHALF_credemption
3694377	VETBULL_credemption
3694394	VETHEDGE
3694411	VETHEDGE_credemption
3694428	VETBEAR
3694445	VETBEAR_credemption
3694462	VETHALF

3694479	VETHALF_credemption
3694360	VETBULL
3738968	SXPBULL
3738985	SXPBULL_credemption
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3739019	SXPHEEDGE_credemption
3739036	SXPBEAR
3739053	SXPBEAR_credemption
3739070	SXPHALF
3739087	SXPHALF_credemption
3777031	DMGBULL
3777048	DMGBULL_credemption
3777065	DMGHEDGE
3777082	DMGHEDGE_credemption
3777099	DMGBEAR
3777116	DMGBEAR_credemption
3777133	DMGHALF
3777150	DMGHALF_credemption
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4704160	UNISWAPBULL_credemption
4704177	UNISWAPHEDGE
4704194	UNISWAPHEDGE_credemption
4704211	UNISWAPBEAR
4704228	UNISWAPBEAR_credemption
4704245	UNISWAPHALF
4704262	UNISWAPHALF_credemption
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4901462	msrm
4982875	SUSHIBULL
4982892	SUSHIBULL_credemption
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4982926	SUSHIHEDGE_credemption
4982943	SUSHIBEAR
4982960	SUSHIBEAR_credemption
4982977	SUSHIHALF
4982994	SUSHIHALF_credemption
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6343062	staking_payer_MSRR
6343079	staking_payer_SRM_LOCKED
6343096	staking_payer_MSRR_LOCKED
6343113	staking_payer_UBXT
6411283	corporate_actions

6530079	staking_payer_FTT
6641752	XLMBULL
6641769	XLMBULL_credemption
6641786	XLMBEAR
6641803	XLMBEAR_credemption
6880466	maps_unlocker
6880500	oxy_unlocker
6884597	srm_unlocker
6888677	fida_unlocker
6983554	srm_cold
7168089	GRTBULL
7168106	GRTBULL_credemption
7168123	GRTBEAR
7168140	GRTBEAR_credemption
7184698	staking_payer_FIDA
7527605	reverted_locked_rewards
8281555	ZECBULL_credemption
8281572	ZECBEAR
8281589	ZECBEAR_credemption
8281538	ZECBULL
9180736	circle_ach
9180753	circle_early_credit_ach_account
9180770	circle_fee_rebate_account
11035589	ieo_ftt_burn
11378598	circle_ach_withdrawals
13131366	staking_payer_SOL
14347189	swipe
14525604	pyth_unlocker
14525621	media_unlocker
14582503	paypal
15097144	staking_payer_RAY
15613570	unstake_requests
15994047	brz_brl_conversion
16908783	wusdt_usdt_conversion
17139915	btc_cold
17139966	eth_cold
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17588749	STMXBULL_credemption
17588766	STMXBEAR
17588783	STMXBEAR_credemption
17588800	IOTABULL
17588817	IOTABULL_credemption
17588834	IOTABEAR
17588851	IOTABEAR_credemption

17588868	SRNBULL
17588885	SRNBULL_credemption
17588902	SRNBEAR
17588919	SRNBEAR_credemption
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18121597	aave_lend_conversion
20144240	cbse_coin_conversion
21509204	ftxpay
21716077	TOMOBEAR2021
21716009	DOGEBEAR2021
21716026	DOGEBEAR2021_credemption
21716043	MATICBEAR2021
21716060	MATICBEAR2021_credemption
21716094	TOMOBEAR2021_credemption
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32158684	SLPBULL
32158701	SLPBULL_credemption
32158718	SLPBEAR
32158735	SLPBEAR_credemption
32455521	CLVBULL
32455538	CLVBULL_credemption
32455555	CLVBEAR
32455572	CLVBEAR_credemption
32821344	nvda_conversion
33736386	hood_conversion
36587337	nuvei
37932615	ftxpay_rotating_addresses
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41590913	liquidations20210907
41590964	paper_bird
47541746	nft_royalties
47541763	loc_interest
53387689	nft_minting_fees
55987924	mega
61250546	boba_airdrop
72669531	sol_loan
81486904	boba_unlocker
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99638144	jp_whitelisted_cold
110036959	holding_frozen_funds_for_worldcash1@protonmail.com
116130048	ftx:admin p2p_escrow
116130065	stocks_embed_account
123303453	stripe
123980563	stripe_cma

124046727	terra_airdrop
126211286	amzn_conversion
146645762	stripe_eca
142776970	stock_or_token_split_conversion
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153959638	KLUNCBULL_credemption
153959655	KLUNCBEAR
153959672	KLUNCBEAR_credemption
156445548	FTXDXYBULL
156445565	FTXDXYBULL_credemption
156445582	FTXDXYBEAR
156445599	FTXDXYBEAR_credemption
156445616	JPYBULL
156445633	JPYBULL_credemption
156445667	JPYBEAR_credemption
156445650	JPYBEAR
157889596	oct13_insurance_fund_receive_then_remove_balances
158341898	stocks_revenue_account
158341915	stablecoin_credemption
158471948	promotional_payout_account
158731300	rewards_payer
159490571	code_redemption_expenses

FIAT accounts

id	username
149158294	info@alameda-research.com/ftx_fiat_old

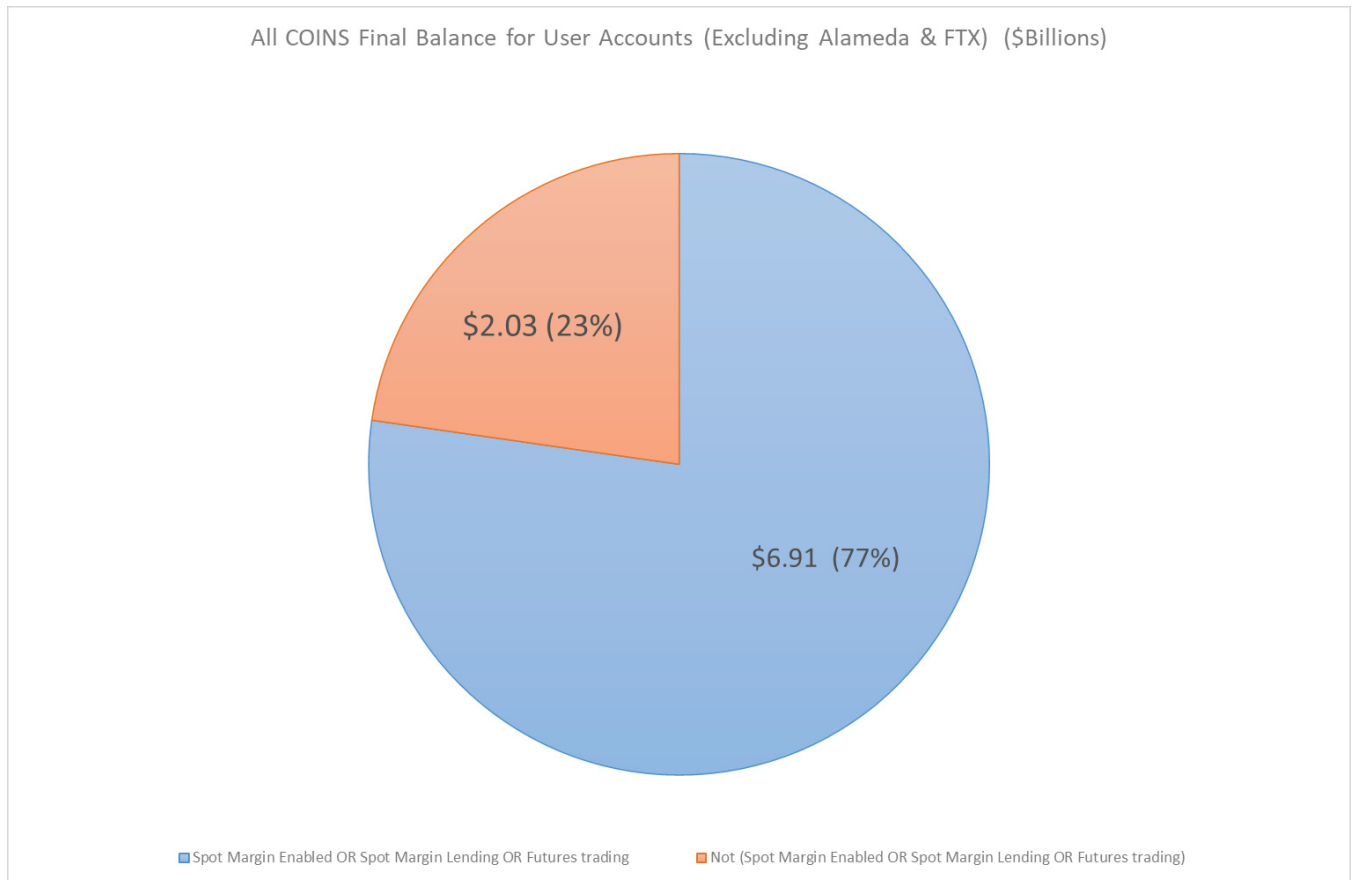
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132613588	fiat@ftx.com/bank_account_369
132613605	fiat@ftx.com/bank_account_366
132613656	fiat@ftx.com/bank_account_367
137153710	fiat@ftx.com/bank_account_364
146681598	fiat@ftx.com/unassigned_fiat_withdrawal_fees
141643274	fiat@ftx.com/bank_account_331
141643325	fiat@ftx.com/bank_account_334
141643495	fiat@ftx.com/bank_account_332
141643665	fiat@ftx.com/bank_account_303
141644328	fiat@ftx.com/bank_account_333
149442483	fiat@ftx.com/uninitialized_bank_account_account
149444234	fiat@ftx.com/bank_account_177
151144098	fiat@ftx.com/bank_account_fees_177
151330979	fiat@ftx.com/bank_account_fees_158
158348783	fiat@ftx.com/bank_account_161

APPENDIX J: Sum of Fair Values All Accounts
Excluding Alameda and FTX for All Coins



APPENDIX K: Database Queries for the Chart of Appendix J

```

SELECT SUM(size *coins.approx_fair) as notional FROM public.balances
JOIN
coins on coin_id=coins.id
JOIN
accounts on account_id =accounts.id
WHERE
account_id NOT IN (9,1266726,1283114,1283148,1300590, ... [truncated])

```

notional

8,943,675,161.53

```

SELECT SUM(size *coins.approx_fair) as notional FROM public.balances
JOIN
coins on coin_id=coins.id
JOIN
accounts on account_id =accounts.id
WHERE
(accounts.spot_margin_enabled =TRUE OR
accounts.spot_margin_lending_enabled =TRUE OR
account_id IN ( SELECT DISTINCT(account_id) FROM public.positions
WHERE net_size != 0))
AND
account_id NOT IN (9,1266726,1283114,1283148,1300590, ... [truncated])

```

notional

6,910,615,317.48

All Accounts	8,943,675,161.53	
Spot Margin Enabled OR Spot Margin Lending OR Futures trading	6,910,615,317.48	77%
Not (Spot Margin Enabled OR Spot Margin Lending OR Futures trading)	2,033,059,844.05	23%

In Billions

Spot Margin Enabled OR Spot Margin Lending OR Futures trading	\$6.91
Not (Spot Margin Enabled OR Spot Margin Lending OR Futures trading)	\$2.03