

# TEAM 13

INVESTMENT PORTFOLIO

DECEMBER 15, 2022





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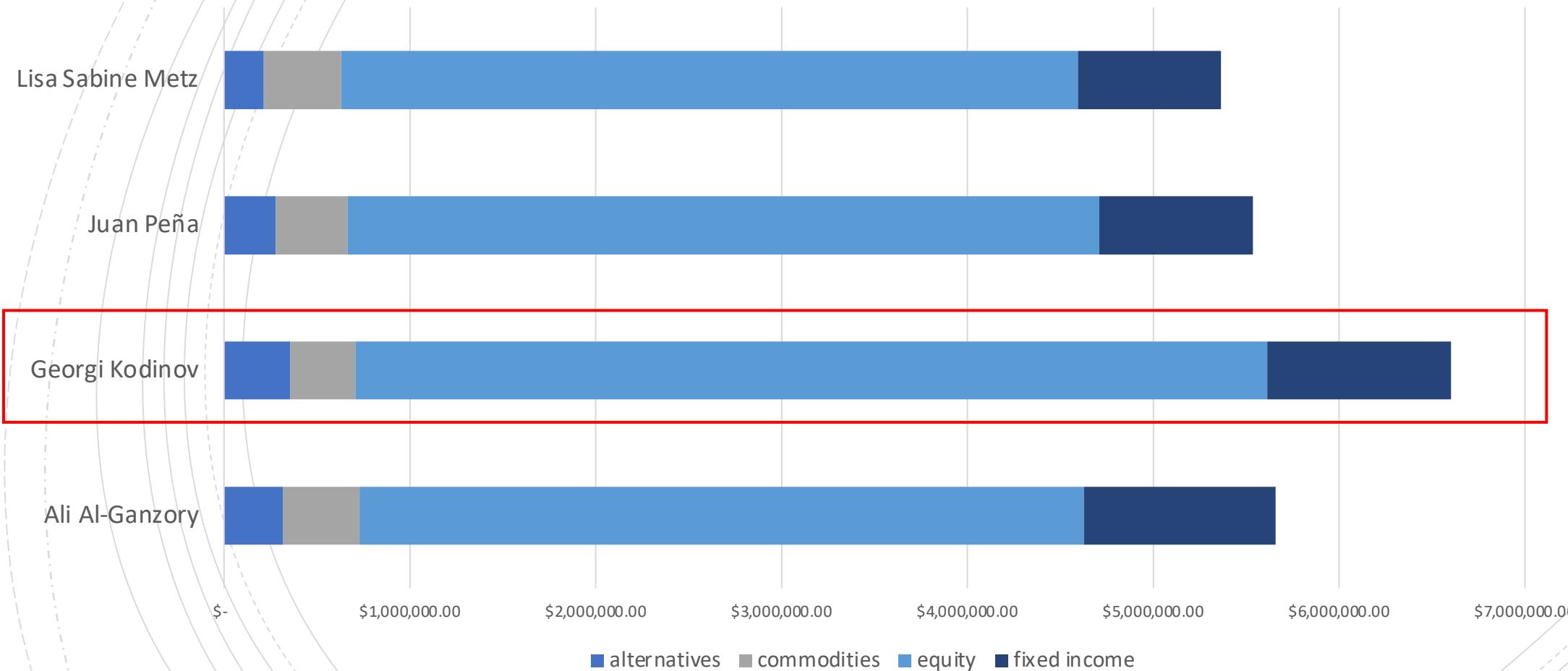
**Omoikhefe Leckey-  
Jeffery  
Aienloshan**

“Diversification of risk matters not just defensively, but because it maximizes returns as well, because we expose ourselves to all of the opportunities that there may be out there.”

**Peter Bernstein**

# Our top four clients

## Portfolio Analysis



# Major current holdings for Georgi Kodinov

## EQUITY



MCKESSON



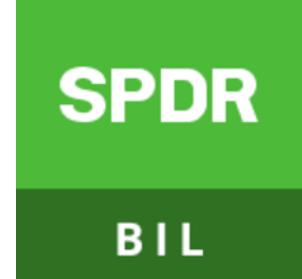
## COMMODITIES



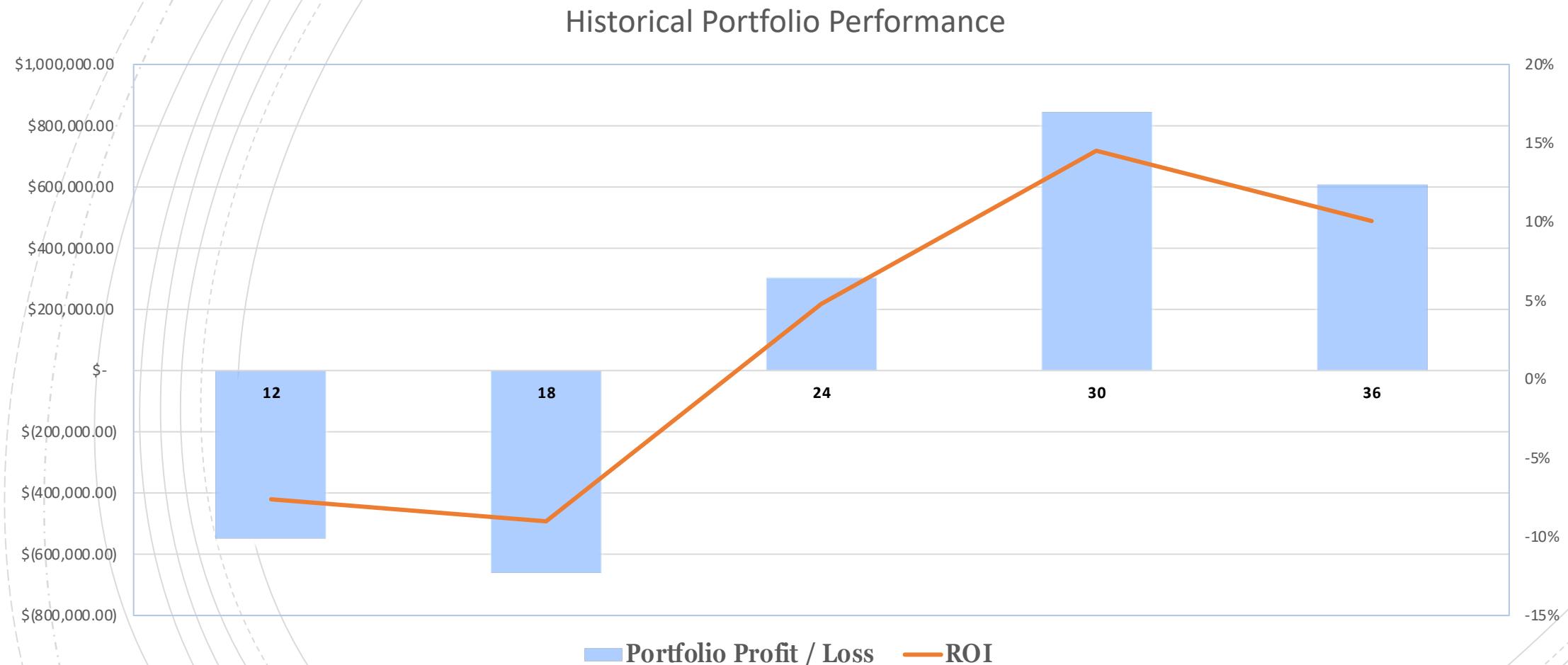
## ALTERNATIVES



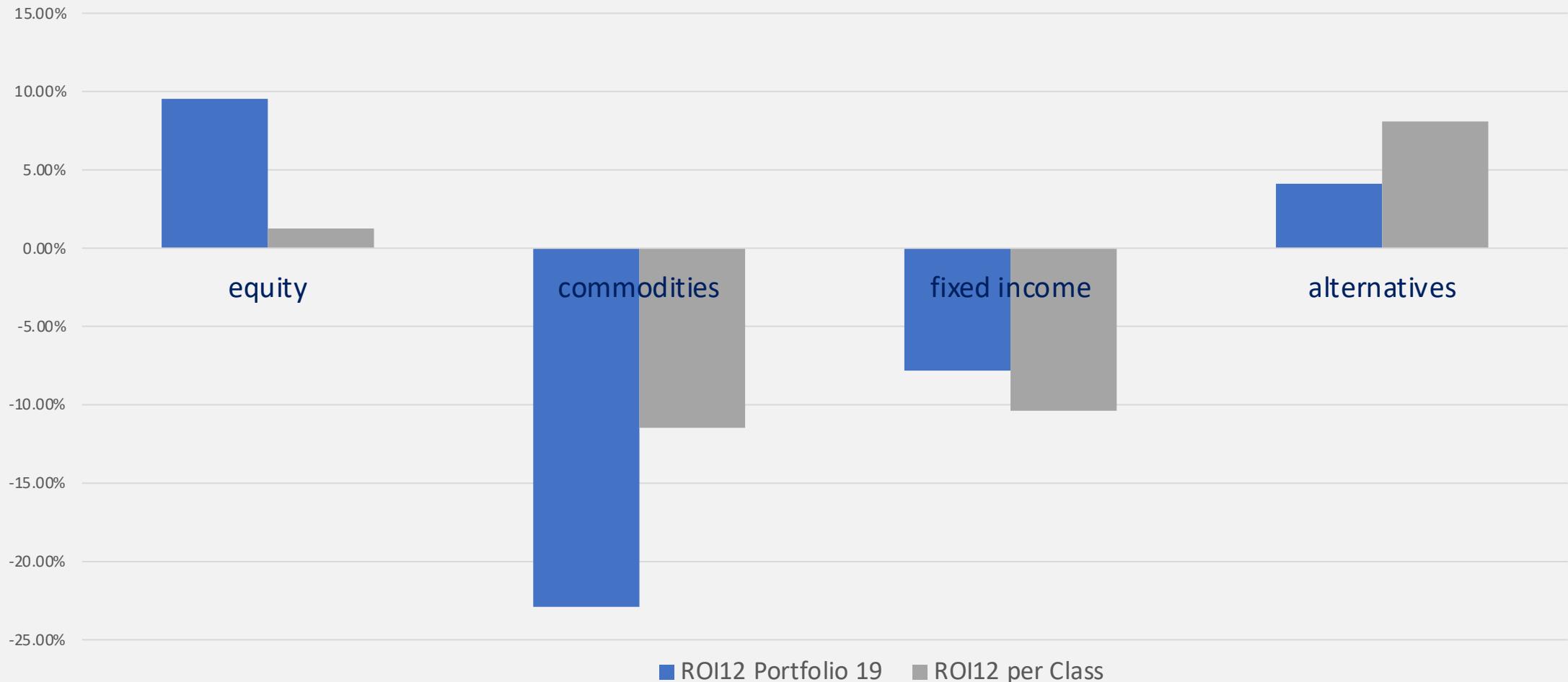
## FIXED INCOME



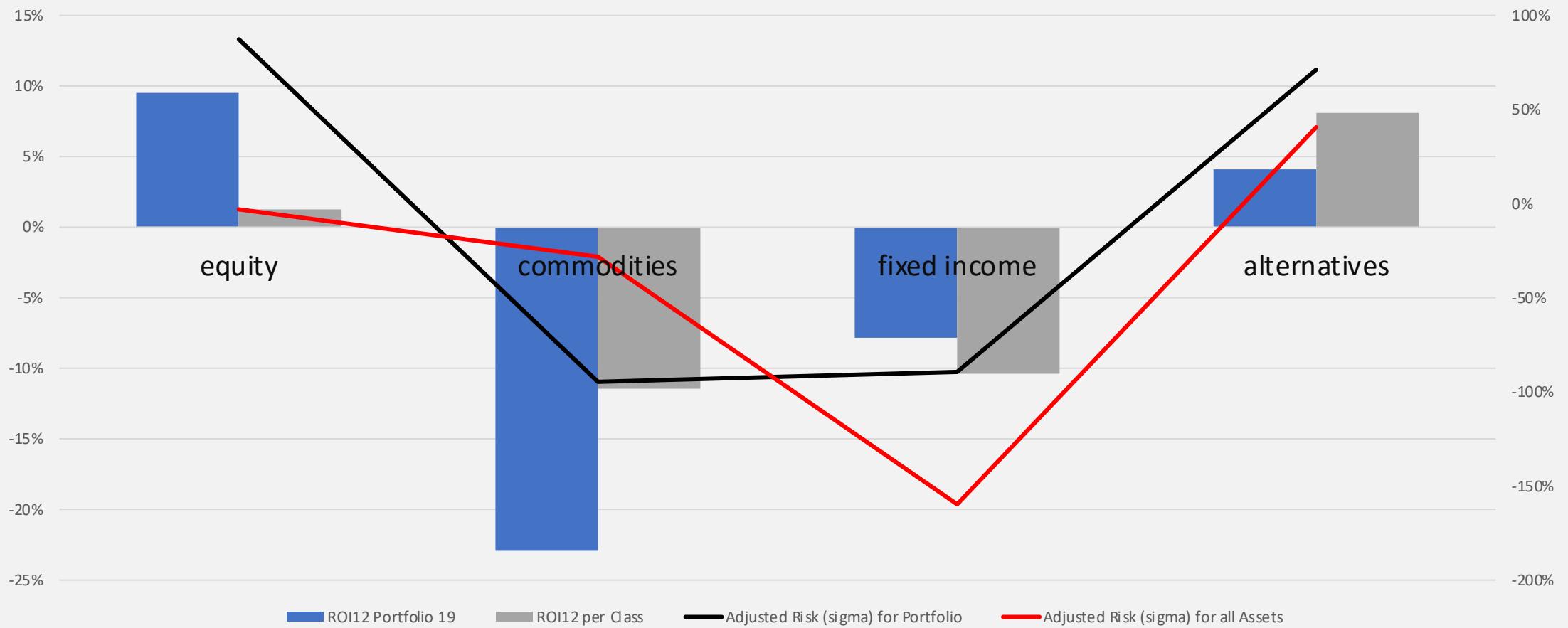
# 36-month ROI for Georgi Kodinov's portfolio



# ROI Overall vs Kodinov



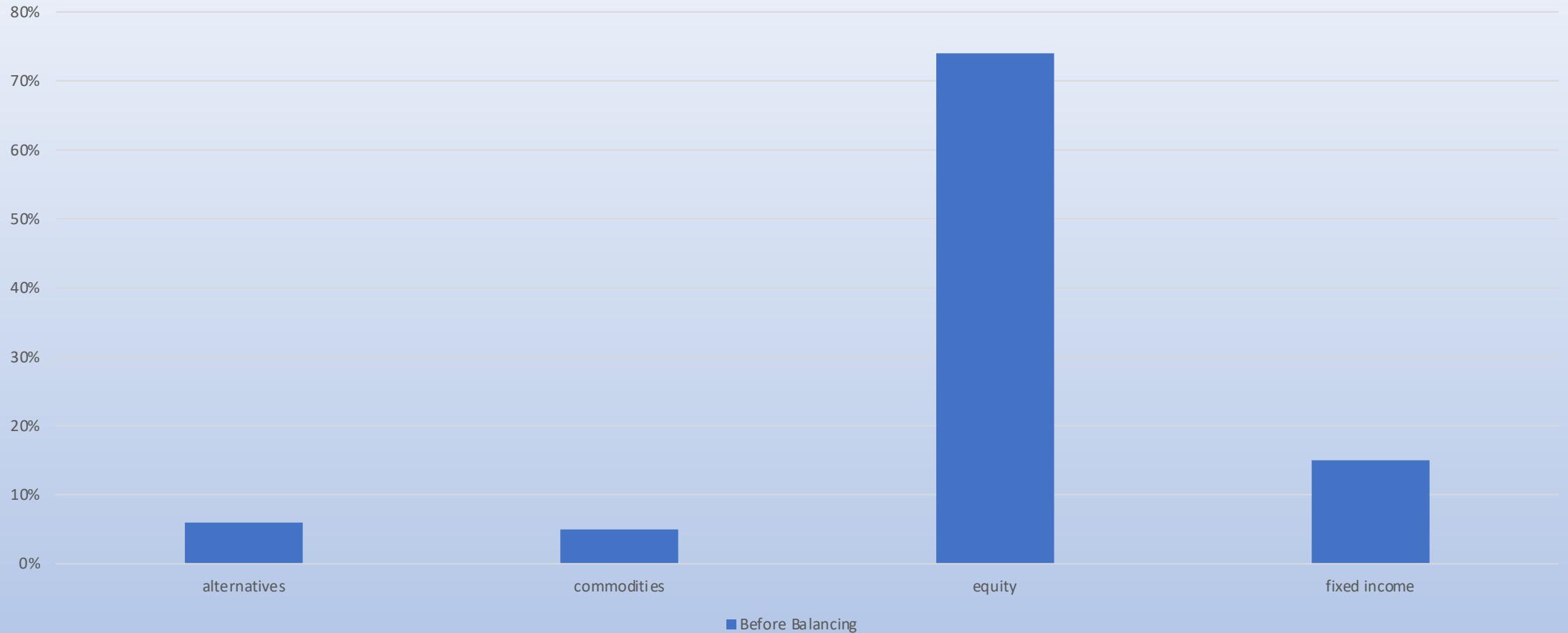
# How does the Risk influence our ROI?



# How to rebalance our Portfolio? How to diversify our risk?

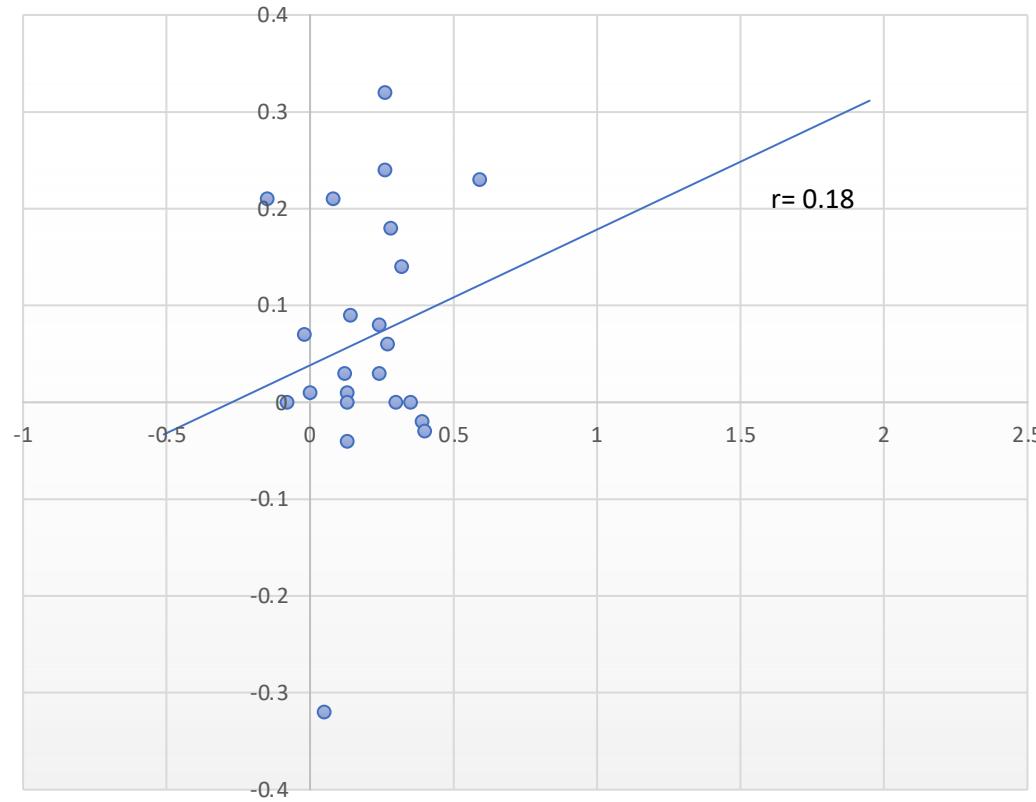


# Rebalancing the Portfolio

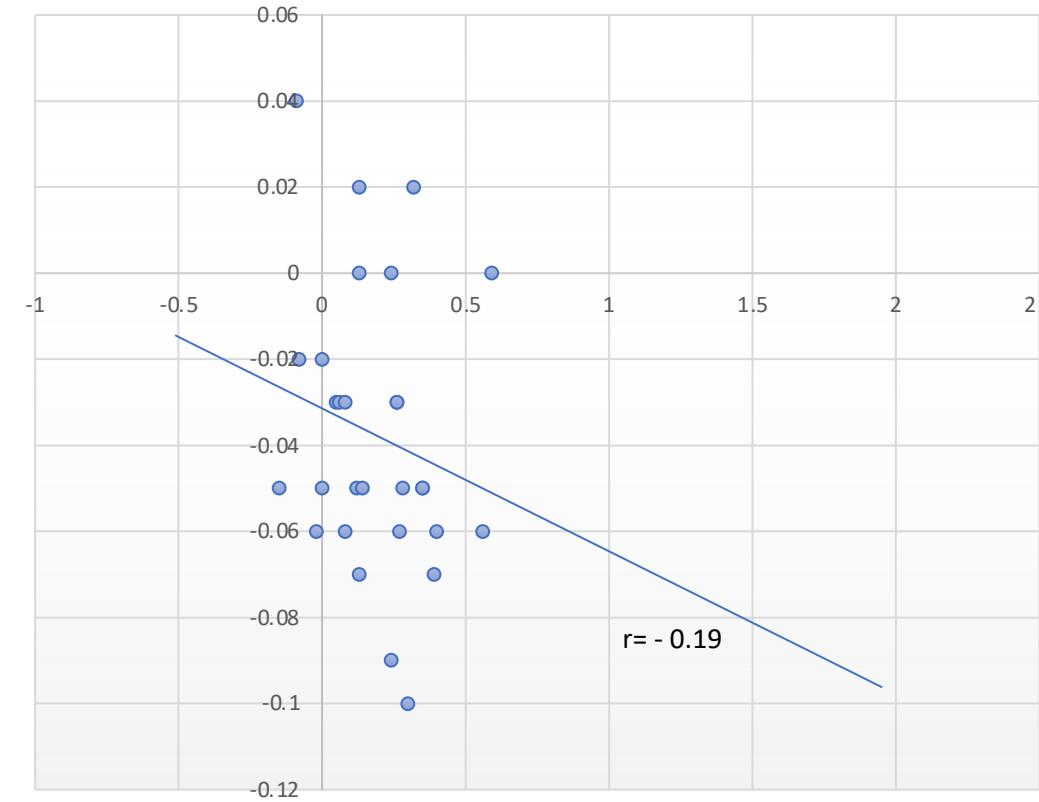


# Correlations per major asset class (Equity vs Alternatives and Fixed Income)

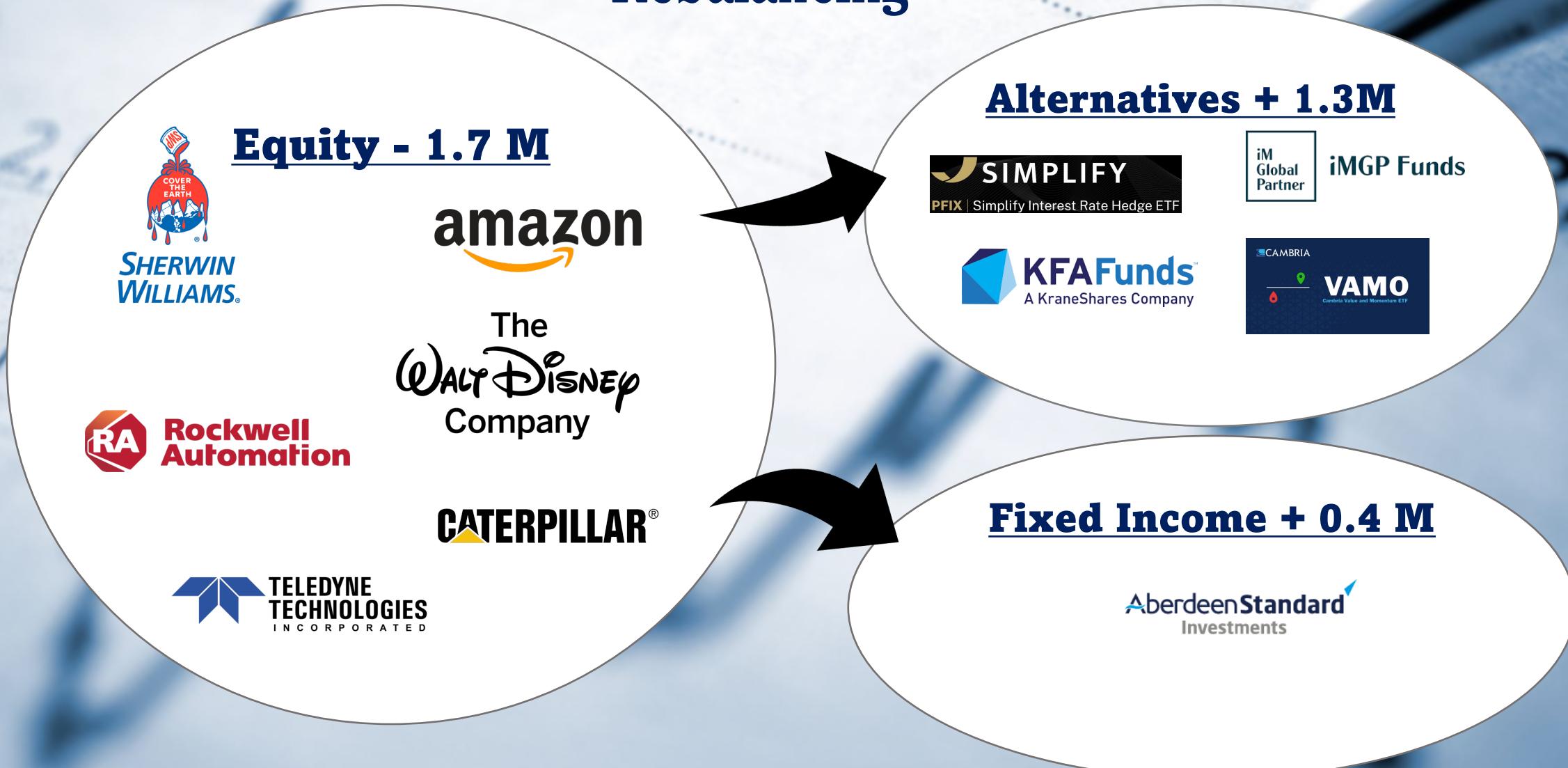
Equity vs alternatives



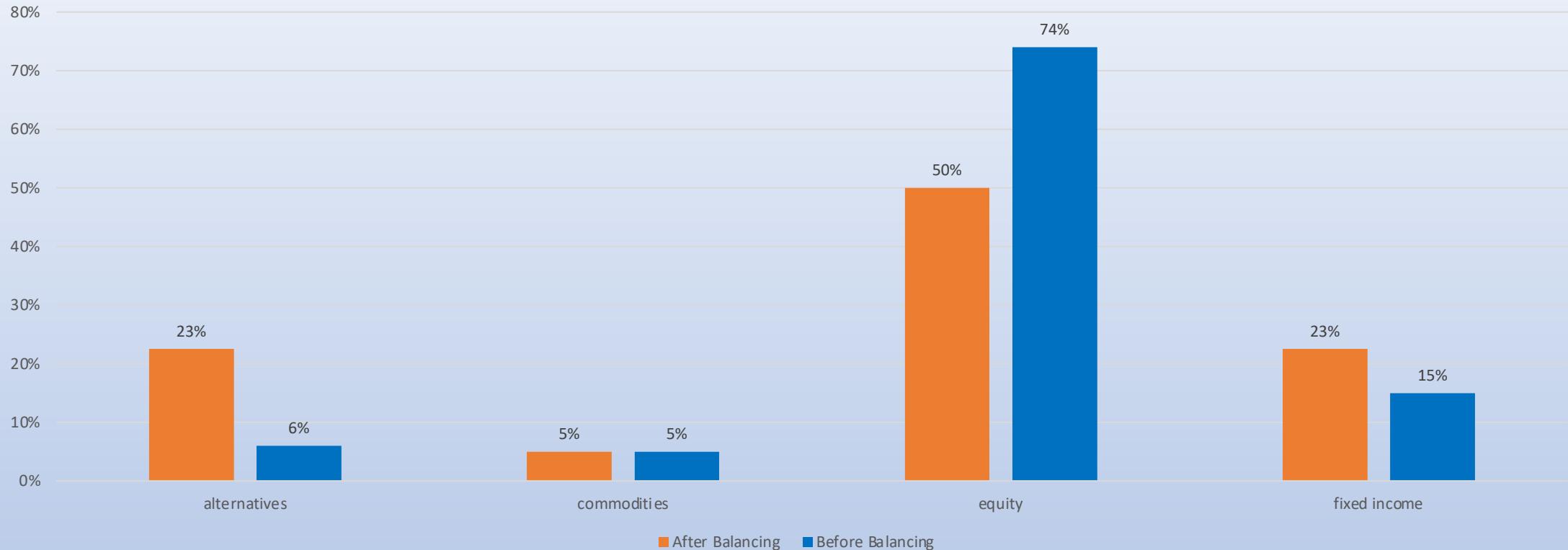
Equity vs Fixed income



# Rebalancing



# Rebalancing the Portfolio



0.57

RISK

0.31

—  
**thank  
you**

# Appendix

- Question 1 - What is the most recent 12M\*\*, 18M, 24M (months) return for each of the securities?

customer_id	full_name	account_id	security_name	ticker	sec_type	major_asset_class	date	price	quantity	lagged_pri...	decimalROI	ProfitLoss
19	Georgi Kodinov	594	AdvisorShares Pure Cannabis ETF	YOLO	etf	commodities	2022-09-09	5.43	461	15.689803	-0.6539153487140661	-4729.769183
19	Georgi Kodinov	594	abrdn Physical Gold Shares ETF	SGOL	etf	commodities	2022-09-09	16.450001	447	17.209999	-0.044160258231275874	-339.7191059999998
19	Georgi Kodinov	594	Invesco Optimum Yield Diversified Commodity...	PDBC	etf	commodities	2022-09-09	17.15	526	13.230177	0.29627895378875124	2061.8268979999993
19	Georgi Kodinov	594	iShares S&P GSCI Commodity-Indexed Trust	GSG	etf	commodities	2022-09-09	21.870001	272	16.139999	0.3550187332725361	1558.5605439999997
19	Georgi Kodinov	594	ProShares UltraShort Bloomberg Crude Oil	SCO	etf	commodities	2022-09-09	25.559999	876	84.849998	-0.6987625267828527	-51938.039123999995
19	Georgi Kodinov	594	First Trust Global Tactical Commodity Strategy...	FTGC	etf	commodities	2022-09-09	26.610001	214	29.62241	-0.10169358266258546	-644.6555259999996
19	Georgi Kodinov	594	United States Natural Gas Fund LP	UNG	etf	commodities	2022-09-09	27.889999	224	26.379999	0.057240335755888314	338.23999999999955
19	Georgi Kodinov	594	HP Inc.	HPQ	common_share	equity	2022-09-09	28.26	772	27.813202	0.01606424172233032	344.9280560000009
19	Georgi Kodinov	594	IQ Merger Arbitrage ETF	MNA	etf	alternatives	2022-09-09	32.009998	815	33.040001	-0.031174423995931285	-839.4524449999948
19	Georgi Kodinov	594	ProShares Ultra Bloomberg Crude Oil	UCO	etf	commodities	2022-09-09	32.139999	214	39.8825	-0.194132790070833	-1656.895213999994
19	Georgi Kodinov	594	iShares Gold Trust	IAU	etf	commodities	2022-09-09	32.580002	712	34.139999	-0.045694113816465036	-1110.717864000002
19	Georgi Kodinov	594	SPDR Gold MiniShares Trust	GLDM	etf	commodities	2022-09-09	34.07	887	39.389999	-0.13505963785376085	-4718.839113000003
19	Georgi Kodinov	594	KFA Mount Lucas Index Strategy ETF	KMLM	etf	alternatives	2022-09-09	36.435001	462	26.483294	0.37577300618269005	4597.688633999999
19	Georgi Kodinov	594	Exelon Corporation	EXC	common_share	equity	2022-09-09	45.84	402	35.001945	0.3096415070648218	4356.898110000002

# Appendix

- Finding correlation between average returns of different asset classes.
- The formula for Pearson's correlation coefficient is covariance of two variables divided by the product of their standard deviations

@avgeq:=(SELECT AVG(`eq`))	@avgcomm:=(SELECT AVG(`comm`))	@avgfi:=(SELECT AVG(`fin`))	@avgalt:=(SELECT AVG(`alt`))	^	@divisor1:=((SELECT STDDEV(`eq`)))	@divisor2:=((SELECT STDDEV(`comm`)))	@divisor3:=((SELECT STDDEV(`fin`)))	@divisor4:=((SELECT STDDEV(`alt`)))	@divisor5:=((SELECT STDDEV(`equity`)))
0.18029729729729704	0.05999999999999991	-0.03758620689655173	0.06521739130434782		0.12701051788234138	0.00822966378911493	0.03321211772029213	0.06702365081160487	0.10000000000000009

# Appendix

- -- Question 1 - What is the most recent 12M\*\*, 18M, 24M (months) return for each of the entire Portfolio?

customer_id	full_name	value	prevValue	ROI	ProfitLoss
► 19	Georgi Kodinov	6,629,249.02	7,175,927.09	-0.0762	-546,678.06

# Appendix

- -- What is the ROI on Major Asset Classes Overall

n_major_asset_cla...	ROI	amount
commodities	-0.11455679132502564	31
equity	0.012495533777822547	369
alternatives	0.0807769262611272	19
fixed income	-0.10385454713492506	29

# Appendix

- -- What is the ROI on Major Asset Classes for our Portfolio
- -- Calculate the weighted ROI for our portfolio based on the quantity

n_major_asset_cla...	SUM( weightedROI ) / SUM(quant...	ROI
commodities	-0.22911096874320894	14403
alternatives	0.04102344729634211	11343
equity	0.09524199514739974	21202
fixed income	-0.07828062122557375	12509

# Appendix

- -- What is the RISK on Major Asset Classes Overall

n_major_asset_cla...	12Mmu	12Msigma	yearlySigma	12risk_adj_sigma
equity	-0.009886794723918468	0.31265785990889633	4.943554828316689	-0.03162176932573941
commodities	-0.11973983150981886	0.4251030843431239	6.721469934416864	-0.28167245997483825
alternatives	0.07656623897372773	0.18871248714086025	2.9838064113938683	0.4057295843733783
fixed income	-0.10291082845372648	0.06443557132620291	1.0188158386224886	-1.5971120661403604

# Appendix

- -- What is the RISK on all Asset on our Portfolio

ticker	12Mmu	12Msigma	12risk_adj_sigma
YOLO	-0.36686130679002515	0.39537585600165287	-0.9278798925660536
WTMF	-0.00000731927194923257	0.027851491846423944	-0.00026279640565007455
VWO	-0.05828963875439215	0.13371659179209563	-0.43591926755822247
VTIP	0.009994355762717939	0.014675345603941072	0.6810303506606311
VTEB	-0.029998230949865895	0.04384236401840134	-0.684229320692542
VCIT	-0.053860072039026936	0.05133308247030388	-1.0492273100915948
V	-0.015129942058442628	0.1013086729005278	-0.14934498326020224
VMBS	-0.04949978202409768	0.03619542939257194	-1.3675699626941316
VCSH	-0.02656223058420174	0.02059775446389605	-1.2895692407034118
SCHW	0.37354485677777133	0.4111422167003667	0.9085538813689967
ROST	-0.13831659937265633	0.1948879735841353	-0.7097236264963448
SCHI	-0.06125294280853875	0.052877972082368635	-1.1583829787028201
PPLT	-0.08635634072438841	0.1262548596044218	-0.6839842917330683
PFIX	0.19525919781679313	0.2308842597614691	0.8457016429726266

# Appendix

- -- What is the RISK on Major Asset Classes on our Portfolio

n_major_asset_cla...	12Mmu	yearlySigma	12Msigma	12risk_adj_sigma
commodities	-0.048133913788596334	2.7060926866263606	0.17114832898572493	-0.9465590036903341
alternatives	0.04563770741967948	1.2169923694746658	0.07696935565190631	0.7110427615107169
fixed income	-0.04170941858409242	0.7028264723380824	0.04445064904911134	-0.8933144587623794
equity	0.18902046222860774	3.214848343838791	0.20332486197155322	0.873196719733079

# Appendix

- -- What to sell in our Portfolio

n_major_asset_cla...	ticker	ROI	weightedROI	quantity	MarketValue
equity	DIS	-0.3773380771399735	-192.4424193413865	510	58741.8
equity	EL	-0.23377724838823502	-80.18559619716461	343	86744.697942
equity	AMZN	-0.22902258121461833	-89.54782925491577	391	52108.571564
equity	MU	-0.22295622467539347	-56.853837292225336	255	14647.199745
equity	SHW	-0.19739161732450733	-162.25590944074503	822	197567.704932
equity	ROK	-0.17710512458305297	-88.02124691777733	497	126923.862485
equity	ROST	-0.16538376815609346	-20.011435946887307	121	11314.710242
equity	BKNG	-0.14688735759313865	-143.2151736533102	975	1931504.278275
equity	HCA	-0.1396433804924421	-46.08231556250589	330	72500.99901
equity	CTSH	-0.13065038416864902	-66.76234631017965	511	33475.611022
equity	ABT	-0.12963030566856493	-24.7593883826959	191	20719.6805729...
equity	BAC	-0.12758138786973544	-17.988975689632696	141	4926.539859
equity	ROP	-0.12605864365057093	-23.44690771900619	186	76289.760744
equity	TDY	-0.09469877828961859	-67.7096264770773	715	277169.74571

# Appendix

- -- What to buy for our Portfolio

n_major_asset_cla...	ticker	ROI	value	lagged_pri...
alternatives	PFIX	0.5666072325234552	61.740002	39.410007
alternatives	KMLM	0.37577300618269005	36.435001	26.483294
alternatives	DBMF	0.2880672004876264	32.779999	25.448982
alternatives	LBAY	0.2168925849537317	27.583	22.66675
alternatives	RINF	0.14242439168132745	33.330002	29.174799
alternatives	VAMO	0.12905601655328816	26.219999	23.222939
alternatives	RLY	0.12506234181871753	28.709999	25.518585
alternatives	BTAL	0.11343792242944029	19.139999	17.190001
alternatives	FMF	0.08881460990449438	50.07	45.98579
alternatives	ARB	0.04655403519652693	26.999001	25.798
alternatives	FLSP	0.0423295516885738...	21.375	20.50695
alternatives	MARB	0.02539359952292537	20.190001	19.690001
alternatives	FTLS	0.0073550497187472...	49.700001	49.337124
alternatives	WTMF	-0.026548989096407	35.189999	36.149738

# Appendix

- -- Picking the sample: Selecting Top 4 clients with highest market value

customer_id	first_name	last_name	account_id	market_value
121	Juan	Peña	20802	4318611.43
19	Georgi	Kodinov	59402	3779492.97
720	Ali	Al-Ganzory	15601	3585017.89
785	Lisa	Metz	227	3491686.5
681	Yuta	Ozawa	38701	3465156.83
141	Fathimath Isha	Ibrahim	27902	3111107.01
123	Nadia	Gil Serrano	26202	2821795.61
32	Sandra	Garcia Garcia	2702	2762813.92
99	Paula	Cevallos	81801	2651704.23
454	Paolo	Aldesino	718	2636580.01
120	Kirby	Phillips	28601	2589180.85
10	Daisuke	Kitaguchi	843	2588387.04
400	Zeinab	Elnefaly	56102	2532360.22
836	Waleed	Youssef	524	2468943.43

# Appendix

- -- Evaluating Georgi's current portfolio

customer_id	full_name	ticker	security_name	quantity	value	date	sec_type	major_asset_class	market_value
19	Georgi Kodinov	AAAU	Goldman Sachs Physical Gold ETF	177	17.040001	2022-09-09	etf	commodities	3016.080177
19	Georgi Kodinov	ABT	Abbott Laboratories	191	108.480003	2022-09-09	common_share	Equity	20719.680572999998
19	Georgi Kodinov	ADI	Analog Devices Inc.	244	154.179993	2022-09-09	common_share	Equity	37619.918292
19	Georgi Kodinov	AMZN	Amazon.com Inc.	391	133.270004	2022-09-09	common_share	Equity	52108.571564
19	Georgi Kodinov	APH	Amphenol Corporation Class A	941	75.900002	2022-09-09	common_share	Equity	71421.901882
19	Georgi Kodinov	ARB	AltShares Merger Arbitrage ETF	702	26.999001	2022-09-09	etf	alternatives	18953.298702
19	Georgi Kodinov	ATVI	Activision Blizzard Inc.	373	78.510002	2022-09-09	common_share	Equity	29284.230746
19	Georgi Kodinov	AXP	American Express Company	143	158.440002	2022-09-09	common_share	Equity	22656.920286
19	Georgi Kodinov	BAC	Bank of America Corp	141	34.939999	2022-09-09	common_share	Equity	4926.539859
19	Georgi Kodinov	BIL	SPDR Bloomberg 1-3 Month T-Bill ETF	820	91.470001	2022-09-09	etf	Fixed Income	75005.40082
19	Georgi Kodinov	BIL	SPDR Bloomberg 1-3 Month T-Bill ETF	895	91.470001	2022-09-09	etf	Fixed Income	81865.650895
19	Georgi Kodinov	BKNG	Booking Holdings Inc.	975	1981.0300...	2022-09-09	common_share	Equity	1931504.278275
19	Georgi Kodinov	BND	Vanguard Total Bond Market ETF	677	73.830002	2022-09-09	etf	Fixed Income	49982.911353999996
19	Georgi Kodinov	BNDX	Vanguard Total International Bond ETF	125	48.709999	2022-09-09	etf	Fixed Income	6088.749875