A STUDY OF GLOBAL ASSET CLASS MOVEMENT WITH GLOBAL ECONOMY

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ABSRACT:

In modern days investments are taking place in cross boarder asset classes to take the advantage of global economy and maximize the returns, This analysis has been emphasized to measure the select global asset classes such as gold, msci, bond, reality, and global asset allocation index, bdi has been considered as global economic indicator this analysis has been emphasize for the period of 2009-2014.regression models arch, garch, tarch, egarch, parch has been applied to measure the volatility of BDI impact on select global asset classes and observed that equity global asset msci volatility got influenced. Bavarian co-relation depicted that bond, gold and reality are moving in opposite direction with bdi during the study period granger causality test has been applied on Johnson co-integrated data and observed that global bond and asset allocation index returns where caused by bdi. Gold, msci and reality indices returns where not caused by bdi this study is use full to the fii/s, global mutual funds, pension funds and investment bankers.

KEY WORDS: **Baltic dry index (BDI), FIIs, gold, global asset allocation index, global bond index, global equity index (msci), global reality index.**

INTRODUCTION:

Many asset classes across the board are moving according to the global economy. Investments in the modern days are rolled by the ibankers across the globe to diversify the risk from the country specific pressure. In this analysis Baltic dry index has been consider as a global economic indicator. Global asset allocation index has been considered as the bench mark for the global asset class in this paper. Asset-allocation approach that allows for funds to be moved among different asset classes quickly. This would mitigate the risk of losses incurred from volatile market conditions. Lessons from the past few years have shown that keeping to a static asset allocation strategy is not an ideal way of managing an investment portfolio. Typically, other funds are reviewed periodically. However I monitor market movements and

trends and from there adjust our asset allocation of the United Global Asset Rotator accordingly on an ongoing basis. This allows us to help retail investors to seize the right market opportunities at the right time.

However, since the beginning of 2014, all asset classes have been moving higher, some more relative to others. I believe that this might not be the best of signs and I believe so because all asset classes were moving higher prior to the financial crisis. A synchronized movement in all asset classes makes it difficult to understand which asset class to remain invested and which asset class to avoid. In this article, I will discuss the likely movement in different asset classes and the recommendation in accordance with my opinion.

The first point is that the latest job growth has not been very encouraging and this is encouraging for equities. Strange as it might sound, the relatively depressed job growth data means that the interest rate hike will be delayed. Equities look overbought and I have argued that a 10%-15% correction is likely soon. However, equities can continue to move higher after the likely correction as the policymakers continue with their expansionary monetary policies. Therefore, investors with high beta stocks can book partial profits and wait for a correction to re-invest. I mention booking partial profits as bull markets can always surprise on the upside.

I remain bullish on gold and the underperformance during the year does not discourage me from buying more gold for the long-term. I can say with conviction that current policies are not enough to translate into sustained economic recovery. The policymakers will continue with expansionary monetary policies and gold will move higher at some point of time as money flows from an overvalued asset class to a relatively undervalued asset class. All the assets which are considered in this study such as bond, msci, reality and gold movement with Baltic dry index during the study period, so that ibankers can take proper decision to shuffle the assets and reframe the strategy to maximize the wealth.

REVIEW OF LITERATURE:

Keith Elliott and Gianluca Marcato (2010): This study had focused on only three asset classes such as real estate, commodities and hedge funds, here they observing that whether these asset

classes will stable over time. My study is focused on global asset classes including reality and global equity. Hence this study is not related to my study.

Nathaniel frank (2009): This study had focused on market co-movements during the global financial crisis period but my study is after global financial crisis 2009-14. My study is focused on BDI is affecting the global asset classes or not. Hence this study is not related to my study.

Reginald Darius and Sören Radde (August 2010): This study had done during the global financial crisis where many asset classes registered rapid increases where this study is about how asset classes have influenced by developments in global liquidity where my observation is whether the BDI is influencing the global asset classes or not, Hence this study is not related to my study.

Dirk G. Baur (2013): This study on focused on gold, here the observation is about how the gold index is influenced by inflation changes, currency changes and central bank reserve policies. My research has been focused not only on gold but also other asset classes such as msci, bond, reality volatility got influenced by the volatility of BDI. Hence this study is not having relevance to my study.

Claudio Raddatz Sergio L. Schmukler Tomás Williams (2013): This study had focused on how the asset allocation and capital flow have important effect on equity, bond, mutual fund investments during 1996 and 2012. My study is focused on gold, msci, bond, reality, asset allocation are as my global asset classes. The data which is between 2009-14, to see BDI is affecting the global asset classes or not. Hence this study is not related to my study.

John Beirne and Jana Gieck (2011): This study had focused on interdependence and contagion across three asset classes (bonds, stocks, and currencies) for over 60 economies over the period 1998 to 2011.My study is focused on gold, reality, msci, asset allocation and bond index are effected by Baltic dry index or not, during the period 2009-14. Hence this study is not related to my study.

David Blitz And Pim Van Vliet (2007): This study focused on asset classes and there returns are stable or not over a period of time, this tells about how to invest, where to invest, when to

invest to get good returns. My study is focused on volatility of global asset classes with Baltic dry index. Hence this study is not related to my study.

Yueh-Ju Lin and Chi-Chen Wang (2014): This study focused on Baltic Exchange Dry Index (BDI) is an independent response of maritime market information for the trading and settlement of physical and derivative contracts. They have used BDI to depict the trend line. They correlated between present BDI and past BDI to know the market and risk assessment. My study is focused on BDI movements with global asset classes. Hence this study is not related to my study.

Dino Roberto Zuccollo (2012): This study focused on the bulk shipping rates of BDI is fluctuating according to the shipping goods costs are not. He focused on BDI to predict future economic movements in a South African context. My study is focused on global asset class movement with BDI. Hence this study is not related to my study.

Michel Agliettaa , Marie Brièreb, Sandra Rigotc, Ombretta Signori (2012): This study focused on pension funds, how can they into asset classes to get returns on the investment is made. It is also to know the performance of the pension funds. My study is related to only asset classes volatility with BDI. Hence this study is not related to my study.

NEED: Investors asset values will fluctuates along with the economy various research papers had focused in different angles. Such as:

- Co-movement of global asset classes.
- Global asset class returns and their performance.
- Currencies fluctuations impact on asset classes.
- Baltic dry index returns on asset returns.

By observing various research articles, thesis and observed a research gap, in this research I had examined global asset class's movement along with the global economy. BDI has been considered as a global economic indicator. Hence there is a need how the global assets are moving with global economy.

OBJECTIVES:

1. To measure the co-movement of global asset class.
2. To measure the BDI volatility impact on global asset class volatility.
3. To measure the global economy impact on global asset class returns.

SCOPE: In this study I had considered four assets such as gold, msci, reality, and bond .the data has been considered 2009-14. Global asset classes, global economic indicator BDI has been considered as the yard stick for the global asset classes. Global asset allocation index has been considered as bench mark to measure the risk and returns. This study focused specifically on volatility of respective asset classes along with the global economy volatility.

RESEARCH METHEDOLOGY:

Bivariate correlation: it is a measure of the relationship between the two variables; it measures the strength of their relationship, which can range from absolute value 1 to 0 the stronger relationship, the closer the value is to 1. Then the formula for ρ can be written as

$$\rho_{X,Y} = \frac{E(XY) - E(X)E(Y)}{\sqrt{E(X^2) - E(X)^2}\,\sqrt{E(Y^2) - E(Y)^2}}.$$

Johansen co integration: it is a procedure for testing co integration of several time series. This test permits more than one co integration relationship so is more generally applicable than the Engle – Granger test which is based on the Dickey – fuller(or augmented) test for unit roots in the residuals from a single (estimated) co integrating relationship.

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$$\Delta y_{1t} = \gamma \Delta y_{2t} + \Delta \varepsilon_{1t} = \gamma \varepsilon_{2t} + \varepsilon_{1t} - \varepsilon_{1,t-1}$$

Granger causality test: Granger defined the relationship based on two principles the cause happens prior to its effect the cause has unique information about the future values of its effect.

Given these two assumptions about causality, granger proposed to test the following hypothesis for identification of causal effect X on Y.

$$\mathbb{P}[Y(t+1) \in A | \mathcal{I}(t)] \neq \mathbb{P}[Y(t+1) \in A | \mathcal{I}_{-X}(t)]$$

Residual: The difference between the observed value of the dependent variable (y) and the predicted value ($\hat{y}$) is called the **residual** (e). Each data point has one residual. Both the sum and the mean of the residuals are equal to zero. That is, $\Sigma\, e = 0$ and e = 0. Residual = Observed value - Predicted value: $e = y - \hat{y}$

ARCH: An ARCH(q) model can be estimated using ordinary least squares. A methodology to test for the lag length of ARCH.

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \cdots + \alpha_q \epsilon_{t-q}^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2$$

GARCH: when testing for heteroskedasticity in econometric models, the best test is the White test. However, when dealing with time series data, this means to test for ARCH and GARCH.

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \cdots + \alpha_q \epsilon_{t-q}^2 + \beta_1 \sigma_{t-1}^2 + \cdots + \beta_p \sigma_{t-p}^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2 + \sum_{i=1}^{p} \beta_i \sigma_{t-i}^2$$

EGARCH: The formulation for g(z_t) the sign and the magnitude of Z_t to have separate effects on the volatility. This is particularly useful in an asset pricing context.

$$g(Z_t) = \theta Z_t + \lambda(|Z_t| - E(|Z_t|))$$

TARCH: Using the heteroskedasticity in regression model based on the affects of egarch white test tarch model deals with time series data and measures separate affects on volatility.

$\epsilon_{t-1}^+ = \epsilon_{t-1}$ if $\epsilon_{t-1} > 0$, and $\epsilon_{t-1}^+ = 0$ if $\epsilon_{t-1} \leq 0$.

PARCH: Using the heteroskedasticity in regression model based on the affects of tarch white test parch model deals with time series data and measures separate affects on volatility.

LIMITATIONS:

1. Global asset allocation index has been considered as bench mark for global asset.
2. PIMCO has been considered as a bond asset.

3. BDI has considered as global economy indicator.

DATA ANALYSIS

1. To measure the co-movement of global asset class.

	BDI	GAA	GRI	MSCI	PIMCO	GOLD
BDI	1					
GAA	0.089031	1				
GRI	-0.15117	0.920321	1			
MSCI	0.072088	0.360342	0.26343	1		
PIMCO	-0.14253	0.870165	0.918904	0.320135	1	
GOLD	-0.46719	0.37411	0.54408	0.232983	0.697244	1

Interpretation: The above analysis of co-relation has been applied to measure the co-movements of global asset classes with global economic indicator Bdi Global Reality, Global Bond Index Pimco And Gold are negatively co-related with the global economic indicator BDI global asset class allocation with this bi-variant co-relation all the global asset classes are moving positively with each of the except reality, PIMCO and GOLD.

2. To measure the BDI volatility impact on global asset class volatility
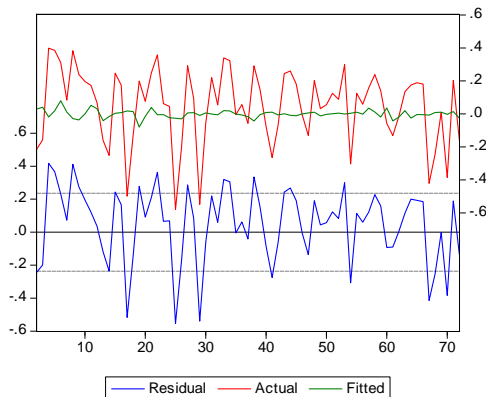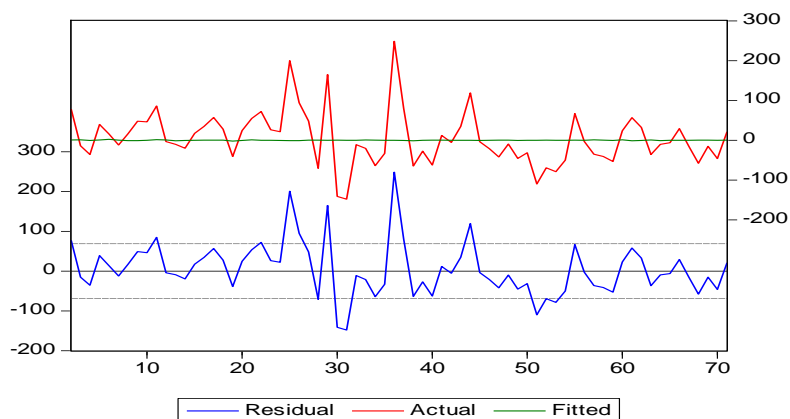

Interpretation: The residual test between BDI and GLOBAL ASSET ALLOCATION shows that the volatility of global asset allocation index is fluctuating in above the fitted line which indicates that volatility of this asset class got affected.

BDI Vs. GLOBAL ASSET ALLOCATION INDEX

TEST	Variable	Coefficient	Std. Error	z-Statistic	Prob.	AIC	SIC
Hetero skedasticity	BDI	5.93E-05	6.38E-05	0.929158	0.3528	-0.02216	0.073446
ARCH	GAA	5.31E-05	6.85E-05	0.776137	0.4377	0.05565	0.246863
GARCH	GAA	5.99E-05	6.22E-05	0.963438	0.3353	0.00524	0.132715
TARCH	GAA	6.35E-05	6.70E-05	0.94845	0.3429	0.028566	0.187909
EGARCH	GAA	4.56E-05	6.47E-05	0.7051	0.4807	0.02883	0.188173
PARCH	GAA	5.31E-05	6.85E-05	0.776137	0.4377	0.05565	0.246863

Interpretation: The above table of regression model indicates that the probability value is observed non-significant with all regression models hence this analysis depicts that global asset allocation index volatility is not influenced by the global economic indicator BDI volatility.
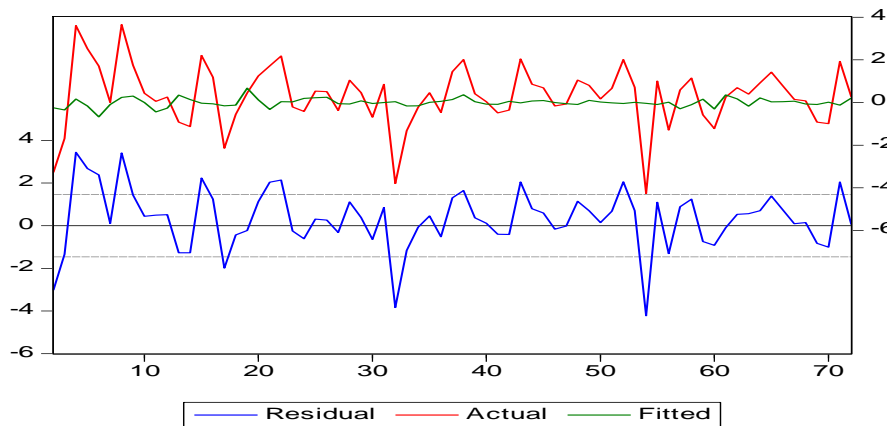
BDI Vs GOLD INDEX:

Interpretation: The residual test between BDI and GLOD shows that the volatility of gold asset in above the fitted line which indicates that volatility of this asset class got affected.

TEST	Variable	Coefficient	Std. Error	z-Statistic	Prob.	AIC	SIC
Hetero skedasticity	BDI	1.68E-03	2.71E-02	0.061965	0.9506	11.31516	11.41153
ARCH	GOLD	6.57E-03	2.10E-02	0.31295	0.7543	11.26876	11.39724
GARCH	GOLD	7.23E-03	1.93E-02	0.374575	0.708	11.28505	11.44566
TARCH	GOLD	7.23E-03	1.93E-02	0.374575	0.708	11.28505	11.44566
EGARCH	GOLD	1.09E-02	1.51E-02	0.721961	0.4703	11.15746	11.31807
PARCH	GOLD	6.93E-03	2.19E-02	0.316791	0.7514	11.32516	11.51789

Interpretation: The above table of regression model indicates that the probability volume is observed non-significant with all regression models hence this analysis depicts that gold asset volatility is not influenced by the BDI volatility.
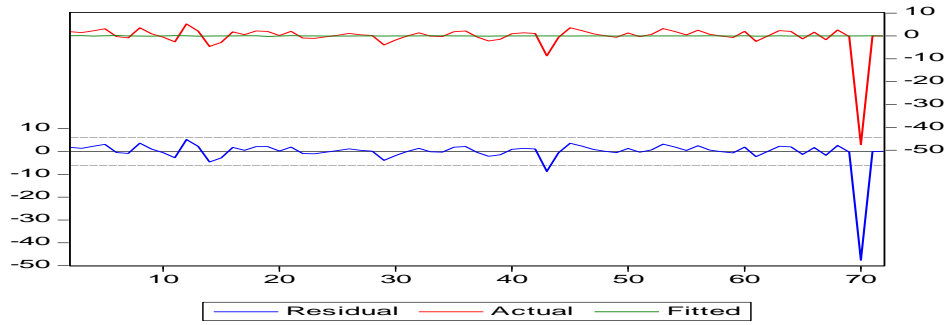
BDI vs. GLOBALREALITYINDEX:

Interpretation: The residual test between Bdi and Global Reality Index shows that the volatility of realty is fluctuating in above the fitted line which indicates that volatility of this asset class got affected.

TEST	Variable	Coefficient	Std. Error	z-Statistic	Prob.	AIC	SIC
Hetero skedasticity	BDI	-0.00055	0.000402	-1.37104	0.1704	3.394114	3.521589
ARCH	GRI	-0.0007	0.000337	-2.0757	0.0379	3.431276	3.558751
GARCH	GRI	-0.00046	0.000529	-0.86919	0.3847	3.519056	3.614662
TARCH	GRI	-0.00047	0.000401	-1.15901	0.2465	3.426844	3.586188
EGARCH	GRI	-0.00059	0.000366	-1.6046	0.1086	3.43882	3.598163
PARCH	GRI	-0.00025	0.000521	-0.487	0.6263	3.561835	3.753047

Interpretation: The above table of regression model indicates that the probability volume is observed non-significant with all regression model, hence this analysis depicts that realty asset volatility is not influenced by the global economic indicator BDI volatility.
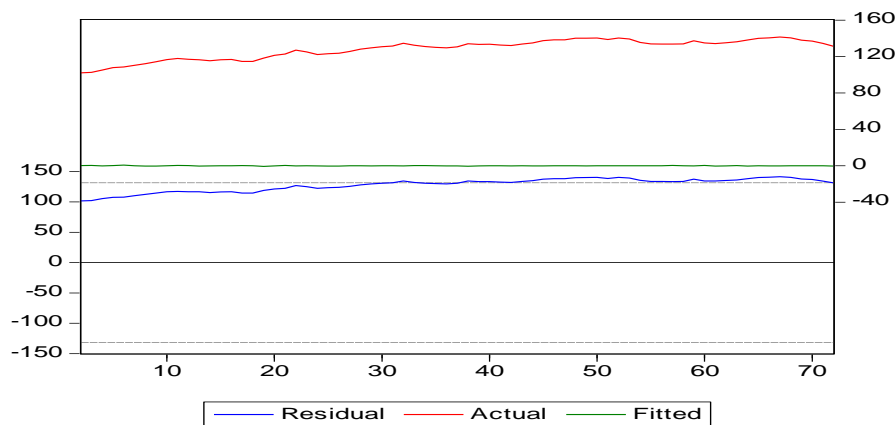
BDI Vs GLOBAL EQUITY INDEX:

Interpretation: The residual test between BDI and MSCI shows that the volatility of msci equity index is fluctuating in above the fitted line which indicates that volatility of this asset class got effected.

TEST	Variable	Coefficient	Std. Error	z-Statistic	Prob.	AIC	SIC
Hetero skedasticity	BDI	0.000145	0.003633	0.0399	0.9682	6.488544	6.58415
ARCH	msci	0.000256	0.007767	0.032979	0.9737	6.463194	6.590669
GARCH	msci	0.000205	1.01E-05	20.3418	0	5.16324	5.258846
TARCH	msci	8.85E-05	NA	NA	NA	6.472088	6.631432
EGARCH	msci	-0.00119	0.000162	-7.32692	0	5.127388	5.286731
PARCH	msci	0.002581	0.007133	0.36183	0.7175	6.721563	6.880907

Interpretation: The above table of regression model indicates that the probability volume is observed non-significant with all regression models hence this analysis depicts that global equity index msci volatility is influenced by the global economic indicator BDI volatility.

BDI Vs. PIMCO (BOND INDEX):

Interpretation: The residual test between BDI and GLOBAL PIMCO BOND INDEX shows that the volatility of global bond index is fluctuating in above the fitted line which indicates that volatility of this asset class got affected.

TEST	Variable	Coefficient	Std. Error	z-Statistic	Prob.	AIC	SIC
Hetero skedasticity	BDI	-0.10885	0.322648	-0.33736	0.7358	14.89649	14.9921
ARCH	pimco	0.000552	0.039552	0.013953	0.9889	12.62525	12.72085
GARCH	pimco	-0.00137	0.039275	-0.03484	0.9722	12.65802	12.7855
TARCH	pimco	-0.00156	NA	NA	NA	12.68207	12.84141
EGARCH	pimco	-0.00089	0.038056	-0.02342	0.9813	12.62728	12.72289
PARCH	pimco	-0.00252	0.040242	-0.06269	0.95	12.65715	12.78463

Interpretation: The above table of regression model indicates that the probability volume is observed non-significant with all regression models hence this analysis depicts that global bond index volatility is not influenced by the global economic indicator BDI volatility.

3. To measure the global economy impact on global asset class returns.

Null Hypothesis:	Obs	F-Statistic	Prob.
BDI does not Granger Cause GOLD		1.90711	0.157
BDI does not Granger Cause MSCI		1.03197	0.3624
BDI does not Granger Cause REALITY		5.21124	0.008
BDI does not Granger Cause GAAI		0.18454	0.8319
BDI does not Granger Cause BOND		0.10899	0.8969

Interpretation: The granger casualty test has been applied to measure the impact of BDI on global asset classes the null hypothesis is accepted for gold, msci and reality with BDI and reject the alternative hypothesis. Global bond index and Global asset class index null hypothesis is rejected and accept the alternative hypothesis.

FINDINGS:

1. Global equity index MSCI and global asset allocation index were moving along with the global economic indicator BDI.
2. Global reality index, Bond index and Gold are moving negatively with global economic indicator BDI.

3. BDI volatility is influenced the global equity asset class index msci volatility during the study period.
4. Global bond, reality, gold and global asset allocation index volatility was not influenced by BDI.
5. Global economic indicator BDI is causing the bond, asset class and global asset class index.

CONCLUSION: I conclude the analysis of global asset class co-movement volatility with global economy. This analysis has been emphasized for the period of 2009-2014. BDI has been considered as the global economic indicator macro level asset classes gold, global bond index, global equity index (msci), global reality index and global asset allocation index where considered and measured the co-movement with BDI. Global equity asset class (MSCI) volatility is influenced by the global economic indicator BDI and rest of the asset classes volatility where not influenced during the study period, in spite of volatility impact of MSCI returns where not caused by the BDI. During the study period global bond and global asset allocation index returns where caused by the BDI. Hence further study is recommended in this area by considering macro level economic variables to measure the global asset class volatility and returns.

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