

An Empirical study on World equity Premium

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ABSTRACT

This paper has been analyzed to find the countries which were trading in premium in the world market to analyse the world equity premium. G20 nations base indices has been considered from 2009 onwards. Performance measure has been applied on global economic indicators (BDI) with world equity index (MSCI). Out of G20 nations 8 countries were narrowed down based on the superior and inferior indices with WEP, ADP has been applied to find the influence of micro economic factors with respective countries. Correlation has been applied between premium and discounted countries, the analysis are given a result U.K and MEXICO markets which were traded in premium found strongly correlated with south Africa which traded in discounted with world equity markets. This paper is useful for global equity investors (FII), international financial institutions global portfolio managers and mutual funds and pension funds ACMs.

KEYWORDS: BDI, GBI, G-20, MSCI, Performance of world equity markets, World equity premium (WEP).

INTRODUCTION:

The financial crisis is the worst the world has seen since the Great Depression of the 1930s. The managerial capacity of inherited institutions of global governance were challenged and warned the structural shift over the financial patterns of unsustainable global demands. The nature of this long-term structural shift was indicated by the trends in world trade. Since 2008, the growth rate of world trade is slightly lower than GDP.

The global economy is in the worst shape since the dark days of 2009. Six out of seventeen countries using Euro currency were worstly hit by recession. The consequences of globalization illustrated the lengthening shadow over the world's economy as the economies around the world were never been so tightly linked. The IMF stated that the world growth forecast was been reduced to 0.6 in 2009 due to global economic meltdown. Optimism faded as investors recognized that governments were still saddling with big debts and banks with bad loans. The meltdown in the developing world markets made it harder for the economies of the United States and Europe to climb out of their ruts.

To analyse the world equity markets post recession the G-20 nations were considered instead of 180 countries so as to reduce the effort on research work. G-20 countries have been chosen for World Equity Premium as they dominate over 85% of the world capital market.

The Group of Twenty (G20) is the premier forum for international cooperation addressing important issues of the global economic and financial agenda. The G20 was formally established in September 1999, in the aftermath of the financial crisis of 1997-1998, finance ministers and central bank governors of seven major industrial countries (Canada, France, Germany, Italy, Japan, the United Kingdom and the United States) met in Washington, D.C. as the crisis revealed the vulnerability in economic context of globalization showed that key developing countries were insufficiently involved in discussions and decisions concerning global economic issues over the international financial system.

Investment in world equities (G-20 countries) has proven rewarding over the long run but accompanied by significantly variable returns. Equity is the riskier asset class which compensates huge rewards with significant volatility.

OBJECTIVES:

1. To find the performance measures between MSCI and BDI.
2. Selecting the countries with ranking by application of World equity premium on G-20 countries.
3. To find the correlation between top four and bottom four countries and indices were influenced with select economic factors.
4. To know the select economic factors effect on Indices with Augmented Dickyfuller test (ADF).
5. To know the performances of the countries trading in both premium and discount.

SCOPE:

1. The analysis has been emphasized after recession effect on global equity markets for the period of 2009-2013
2. Variables where considered for analysis are inflation, GDP, exports, imports, base index, industrial production, budget, business confidence index, foreign reserves etc..

EMPARICAL STUDY:

Morgan Stanley Capital International (MSCI), Foreign direct investment, Gross Domestic Product, Global Bond Index, Foreign Reserves, Inflation, Business Confidence Index, Index of Industrial Production (IIP), Import, Export, Government Budget, Baltic Dry Index (BDI), Base index (Equity), G-20, Foreign institutional investments, Production manager index

TOOLS FOR ANALYSIS:

1. Augmented Dickey–Fuller test :

In statistics and econometrics, an augmented Dickey–Fuller test (ADF) is a test for a unit root in a time series sample. It is an augmented version of the Dickey–Fuller test for a larger and more complicated set of time series models. The augmented Dickey–Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit root at some level of confidence.

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \dots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t$$

Regression model :-

$$\nabla y_t = (\rho - 1)y_{t-1} + u_t + \delta y_{t-1} + u_t$$

2. T-Test :

The test statistic in the t-test is known as the t-statistic. The t-test looks at the t-statistic, t-distribution and degrees of freedom to determine a p value (probability) that can be used to whe

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s_1^2/n_1 + s_2^2/n_2)}}$$

3. Covariance :

The covariance between two random variables and can be computed using the definition of

$$\text{Cov}[X, Y] = E[(X - E[X])(Y - E[Y])]$$

covariance:

4. Correlation :

In the world of finance, a statistical measure of how two securities move in relation to each other. Correlations are used in advanced portfolio management.

6. Correlation Coefficient, r :

The mathematical formula for computing r is:

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{(\sum x^2) (\sum y^2)}}$$

7. Coefficient of Determination, r 2 or R2 :

The coefficient of determination is the ratio of the explained variation to the total variation.

The coefficient of determination is such that $0 < r^2 < 1$, and denotes the strength of the linear

8. Mar ratio :

Compounded avg growth rate[cagr] / max draw down

Cagr = (100/1st day of de year ie 1apr) x (last day – first day)

Max draw down = (max value of 2009-13) - (min value of 2009-13)

9. World Equity Ratio :

World Equity Premium = [(1+Equity rate of return)] / [(1+Risk free returns)]-1

Equity Rate Of Return = (100/current year base index - previous year base index)*Previous year base index

Risk Free Return = Yearly Average of Global Bond Index.

LIMITATIONS:

1. For the calculation of World Equity Premium risk free rate of return has been considered PIMCO-Global Bond Index.
2. G-20 countries have been considered for World Equity Premium because it will be difficult to consider 180 countries for the analysis purpose. Though G-20 countries are covering 85% of the Market Capital among world countries.
3. Japan's economic variable BCI & Budget values were not considered due to non availability of data.
4. Mexico's Budget values have not been considered due to availability of data.
5. To measure the performance, MAR Ratio has been applied because scope of the project is more than 3 years.

LITERATURE REVIEW:

Chieng Fayrene Y.L, Goi Chai Lee : Brand equity is a concept born in 1980s. It has aroused intense interest among business Strategists from a wide variety of industries as brand equity is closely related with brand loyalty and brand extensions. Besides, successful brands provide competitive advantages that are critical to the success of companies. However, there is no common viewpoint emerged on the content and measurement of brand equity. Brand equity has been examined from financial and customer-based perspectives. This paper will only study the customer-based brand equity which refers to the consumer response to a brand name. The aims of the study are to review the dimensions of customer-based brand equity by drawing together strands from various literature and empirical studies made within the area of customer-based brand equity. A conceptual framework for measuring customer-based brand equity is developed to provide a more integrative conceptualization of brand equity.

Jia Liu, Shigeru Iwata: A dynamic factor model is designed to decompose stock return volatility into three orthogonal factors: world factor, region factor and local factor (idiosyncratic component), which are assumed to capture all variation of volatility in stock markets. Fourteen countries are included in the empirical study in order to cover both developed stock markets and emerging stock markets. Stock return volatility is measured as log variance of log return based on historical stock index price levels over period 1993 to 2009. All parameters and unobserved factors in the model are estimated by Markov Chain Monte Carlo methods. Empirical results show that common factors are able to account for more than 50% variation of volatility for most of countries. World factor seems to be significant for North America and Latin America, nevertheless region factor is more important for Europe and Asia. Spillover effects across stock markets and impact of financial integration on world stock market are also investigated.

Bekaert, Geert, Harvey, Campbell R., Lumsdaine, Robin L : The integration of world capital markets is notoriously difficult. For example, regulatory changes which appear comprehensive may have little impact on the functioning of the capital market if they fail to lead to foreign portfolio inflows. In contrast to the usual practice of documenting the timing of regulatory

changes, we specify a reduced-form model for a number of financial time-series (for example, equity returns and dividend yields) and search for a common break in the process generating the data. In addition, we estimate a confidence interval for the break. Information on a variety of financial and macroeconomic indicators is employed to interpret the results and to identify the likely date the equity market becomes financially integrated with world capital markets. We find endogenous break dates that are very accurately estimated but do not always correspond closely to dates of official capital market reforms. After the break, stock markets are on average larger and more liquid than before; returns are more volatile and more highly correlated with the world market return, dividend yields are lower and credit ratings improve.

Geert Bekaert : This article develops a return-based measure of market integration for nineteen emerging equity markets. It then examines the relation between that measure, other return characteristics, and broadly defined investment barriers. Although the analysis is exploratory, some clear conclusions emerge. First, global factors account for a small fraction of the time variation in expected returns in most markets, and global predictability has declined over time. Second, the emerging markets exhibit differing degrees of market integration with the U.S. market, and the differences are not necessarily associated with direct barriers to investment. Third, the most important de facto barriers to global equity-market integration are poor credit ratings, high and variable inflation, exchange rate controls, the lack of a high-quality regulatory and accounting framework, the lack of sufficient country funds or cross-listed securities, and the limited size of some stock markets.

Turan G. Bali, Nusret Cakici : This paper determines whether the world market risk, country-specific total risk, and country-specific idiosyncratic risk are priced in an international capital asset pricing model (ICAPM). The paper also tests if the price of risk associated with each factor is common across countries. Portfolio-level analyses, country-level cross-sectional regressions, stacked time-series, and pooled panel regressions indicate that the world market risk is not, but country-specific total and idiosyncratic risks are significantly priced in an ICAPM framework with partial integration. In addition, the prices of total and idiosyncratic risks are significantly different across 37 countries considered in the paper. This result is robust to different methods for estimating risk measures, different investment horizons, and after controlling for the countries' aggregate dividend yield, earnings-to-price ratios, inflation risk, aggregate volatility risk, and past return characteristics. The main findings turn out to be insensitive to the choice of one-factor.

Saif Siddiqui : In recent years, globalisation, economic assimilation and integration among countries and their financial markets have increased interdependency among major world stock markets. This increased interdependency among the worldwide stock markets may have impacts on the global investors for their assets allocation decision and on the economic policies of economies for ensuring economic stability. Hence, there is a need to study the extent of integration among the world stock markets which is the objective of this paper. It examines the relationships between the selected Asian and the US stock markets over a period, 19/10/1999 to 25/04/2008, using daily closing data of twelve stock markets. Results of the present study show that stock markets under study are integrated. The degree of correlation between the markets, but Japan, varies between moderate to very high. Furthermore, it provided that no stock market is playing a very dominant role in influencing other markets. The US influence is not noticeable as in the earlier researches. It is expected that the results will be useful for the global investors in managing their international portfolios.

Geert Bekaert, Campbell R. Harvey, Christian T. Lundblad : Equity market liberalizations, if effective, lead to important changes in both the financial and real sectors as the economy becomes integrated into world capital markets. The study of market integration is complicated because one can liberalize in many ways and many countries have taken different routes. To study the effectiveness of particular liberalization policies, the sequencing of liberalizations, and the impact on the real economy, systematic methods must be developed to date the liberalization of emerging equity markets. We provide a synthesis of the current methods and show the impact of liberalization on the real sector.

DATA ANALYSIS:

MAR Ratio:

Variable	Mar Ratio	
	MSCI	BDI
2009-10	0.04883	0.0287
2010-11	0.04169	0.0081
2011-12	0.1559	-0.0195
2012-13	0.3925	0.0008

The above table consists of performance measure of World Economic Indicators.

WEP values:

	2009-10	2010-11	2011-12	2012-13
Canada	2.00142	4.6767	-8.3787	13.18371
Indonesia	0.26577	2.62695	9.84348	3.704
Brazil	0.697	-23.45	-66.5055	-9.10844
North Ireland	1.29466	33.7996	-36.9348	5.0537
Euro Area	2.179	-53.8758	-6.6225	4.0632
Germany	1.7891	5.9877	-22.9813	3.2778
India	0.52746	17.8224	-8.5707	5.9585
Italy	2.3415	-20.4828	-4.28	8.83939
Japan	3.1062	-8.15843	23.069	1.76618
USA	1.6562	7.9751	14.2988	6.0484
France	1.9326	-103.633	7.0015	3.5385
Australia	1.9856	-20.7408	7.205	3.5863
Turkey	0.01352	10.0167	-8.599	1.0887
South Korea	1.9913	3.9822	-15.2427	-61.3849
Russia	-0.0242	2.6374	-5.6289	-6.5327
Argentina	-0.037237	1.193988	-4.7717	0.9116
South Africa	-6.5643	2.7036	-7.0558	-3.952
Mexico	-0.2873	8.5257	25.9162	6.109
China	-0.991	-0.9917	-4.3019	-5.9575

Soudi Arabia	1.0228	-24.236	3.3382	-8.5716
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The above table consists of G20 nations base indices, on which, World equity premium has been applied year on year from 2009 -2013.

Year	Premium Countries	WEP-values
2009-10	Japan	3.1062
2010-11	UK	33.7996
2011-12	Mexico	25.9162
2012-13	Canada	13.183706
Year	Discount Countries	WEP-values
2009-10	South Africa	-6.5643
2010-11	France	-103.633
2011-12	Brazil	-66.5055
2012-13	South Korea	-61.3849

The above table consists Premium and Discount countries of G20 nations base indices, 2009 -2013 .

Correlation :

Country Name	Mexico	Brazil	Canada	France	Japan	South Africa	South Korea	UK
Mexico	1.000000	0.048148	-0.07911	0.135819	0.110422	-0.222373	0.861939	0.909061
Brazil	0.048148	1.000000	-0.01696	0.104351	0.082731	0.139787	0.233106	0.157655
Canada	-0.07911	-0.01696	1.000000	-0.05822	0.015837	-0.057942	-0.090226	-0.10059
France	0.135819	0.104351	-0.05822	1.000000	0.644161	-0.283612	0.320546	0.446357
Japan	0.110422	0.082731	0.015837	0.644161	1.000000	-0.591039	0.073837	0.315682
South Africa	-0.22237	0.139787	-0.05794	-0.28361	-0.59104	1.000000	0.069719	-0.16851
South Korea	0.861939	0.233106	-0.09023	0.320546	0.073837	0.069719	1.000000	0.916401

Correlation analysis has been applied on 8 countries which were selected through WEP, out of which, four discounted and four premium trading countries .

Out of these 8 countries, Mexico and UK , South Africa, and UK indices were strongly correlated during the period.

South Africa and Japan are negatively correlated .These two indices behaved in different directions during the period. The aim of the analysis is to find the linear relation among each other after recession.

CoVariance :

Methods	df	Value	Probability
Bartlett	7	2401.331	0
Levene	(7, 375)	3.526793	0.0011
Brown Forsythe	(7, 375)	0.999299	0.4313

Category Statistics

			Mean Abs.	
Variable	Count	Std. Dev.	Mean Diff.	Median Diff.
BRAZIL	48	78590.48	22148.55	16364.42
CANADA	48	166845.8	47159.99	24791.81
FRANCE	48	300.8504	254.2287	252.4415
JAPAN	48	810.5713	632.6358	630.919
MEXICO	47	5328.463	4162.657	4133.849
SOUTHAFRICA	48	1103.187	873.9734	853.9585
SOUTHKOREA	48	216.3641	176.3622	173.2578
UK	48	506.6761	388.7357	383.7172
ALL	383	68766.3	9488.511	5952.784

Bartlett weighted standard deviation: 65321.1

T-Test :

Variables	T-Test Values			
	UK	Japan	South Africa	South Korea

IIP	1.85763	3.35348	4.50974	2.02172
GDP	1.85959	3.3548	4.51651	1.995
EX	1.9907	3.49064	5.68464	1.83639
IM	0.000053	3.49801	0.000409234	1.43044
FR	9.0902	8.9544	1.71546	2.84083
G.FDI	0.0227047675	0.2404571	0.032210258	0.014361663

The table value for two-tail homoscedastic test is 4.303

Country Name	Variables	T-test Values	Accept	Reject
Japan				
	IIP	3.35348	*	
	GDP	3.3548	*	
	EX	3.49064	*	
	IM	3.49801	*	
	FR	8.9544		*
	G.FDI	0.24045715	*	
South Africa				
	IIP	4.50974		*
	GDP	4.51651		*
	EX	5.68464		*
	IM	0.000409234	*	
	FR	1.71546	*	
	G.FDI	0.032210258	*	
South Korea				
	IIP	2.02172	*	
	GDP	1.9951	*	
	EX	1.83639	*	
	IM	1.43044	*	

	FR	2.84083	*	
	G.FDI	0.014361663	*	

6 Augmented Dickey-Fuller test :

Null-Hypothesis : The variable has a unit root.

Exogenous : Constant

Lag Length : 1 (Automatic based on SIC, MAXLAG=3)

Country	Variables	t-Statistic	Prob	Test Critical Value			Accept	Reject
				1% level	5% level	10% level		
TOP								
Japan								
	IIP	-4.26754	0.0056	-3.95915	-3.081	-2.68133	*	
	GDP	-4.33128	0.0071	-4.12199	-3.14492	-2.71375	*	
	Inflation	-1.65961	0.4300	-3.95915	-3.081	-2.68133	*	
	EX	-3.23222	0.0381	-3.95915	-3.081	-2.68133	*	
	IM	1.73331	0.3960	3.95915	3.081	2.68133	*	
UK								
	BCI	-3.12455	0.0463	-3.95915	-3.081	-2.68133	*	
	IIP	-5.72238	0.0008	-4.12199	-3.14492	-2.71375	*	
	GDP	-3.76096	0.0155	-4.00443	-3.0989	-2.69044	*	
	Inflation	-7.44361	0.0000	-3.95915	-3.081	-2.68133	*	
	Budget	2.36222	0.1674	3.95915	3.081	2.68133	*	
	EX	-4.87911	0.0019	-3.95915	-3.081	-2.68133	*	
	IM	-4.58014	0.0032	-3.95915	-3.081	-2.68133	*	
Mexico								
	BCI	-3.10658	0.0532	-4.12199	-3.14492	-2.71375	*	
	IIP	-3.70682	0.0171	-4.00443	-3.0989	-2.69044	*	
	GDP	-6.22574	0.0002	-4.00443	-3.0989	-2.69044		*
	Inflation	-3.08566	0.0496	-3.95915	-3.081	-2.68133	*	
	EX	-1.93842	0.3076	3.95915	3.081	2.68133	*	
	IM	-3.87135	0.0118	-3.95915	-3.081	-2.68133	*	
Canada								
	BCI	-4.70041	0.0029	-4.00443	-3.0989	-2.69044	*	

	IIP	-2.22319	0.2067	-3.95915	-3.081	-2.68133	*	
	GDP	-4.56312	0.0037	-4.00443	-3.0989	-2.69044	*	
	Inflation	-4.4121	0.0055	-4.05791	-3.11991	-2.7011	*	
	Budget	-0.57191	0.8429	-4.12199	-3.14492	-2.71375	*	
	EX	0.76632	0.7995	-3.95915	-3.081	-2.68133	*	
	IM	-1.99466	0.2856	-3.95915	-3.081	-2.68133	*	
BOTTOM								
South Africa								
	BCI	-2.03193	0.2715	-3.95915	-3.081	-2.68133	*	
	IIP	-5.64859	0.0009	-4.12199	-3.14492	-2.71375	*	
	GDP	-4.75443	0.0023	-3.95915	-3.081	-2.68133	*	
	Inflation	-3.71415	0.0196	-4.12199	-3.14492	-2.71375	*	
	Budget	5.1681	0.0016	4.05791	3.11991	2.7011	*	
	EX	-1.84948	0.3447	-3.95915	-3.081	-2.68133	*	
	IM	0.265164	0.9674	-3.95915	-3.081	-2.68133	*	
South Korea								
	BCI	-1.2498	0.6233	-3.95915	-3.081	-2.68133	*	
	IIP	-1.67459	0.4230	-3.95915	-3.081	-2.68133	*	
	GDP	-3.69592	0.0174	-4.00443	-3.0989	-2.69044	*	
	Inflation	-2.13489	0.2351	-3.95915	-3.081	-2.68133	*	
	Budget	3.25525	0.0418	4.12199	3.14492	2.71375	*	
	EX	-1.9272	0.3111	-4.05791	-3.11991	-2.7011	*	
	IM	-0.8914	0.7616	-3.95915	-3.081	-2.68133	*	
France								
	BCI	-2.01029	0.2794	-4.00443	-3.0989	-2.69044	*	
	IIP	-2.4613	0.1474	-4.12199	-3.14492	-2.71375	*	
	GDP	-2.39262	0.1607	-4.00443	-3.0989	-2.69044	*	
	Inflation	-3.26496	0.0374	-4.00443	-3.0989	-2.69044	*	
	Budget	0.96176	0.7301	4.12199	3.14492	2.71375	*	
	EX	-1.80396	0.3643	-3.95915	-3.081	-2.68133	*	
	IM	-1.79084	0.3701	-3.95915	-3.081	-2.68133	*	
Brazil								
	BCI	-2.46673	0.1421	-3.95915	-3.081	-2.68133	*	
	IIP	-3.97586	0.0105	-4.00443	-3.0989	-2.69044	*	

	GDP	-4.01023	0.0120	-4.12199	-3.14492	-2.71375	*	
	Inflation	-1.7509	0.3839	-4.12199	-3.14492	-2.71375	*	
	Budget	-4.177	0.0067	-3.95915	-3.081	-2.68133	*	
	EX	-1.82376	0.3557	-3.95915	-3.081	-2.68133	*	
	IM	1.06331	0.6927	4.12199	3.14492	2.71375	*	

Augmented Dickey-Fuller test has been applied on select internal micro economic factors to base index of that particular country

FINDINGS & SUGGESTIONS:

1. After recession, out of G20 countries, Japan and UK Markets performed very well
 From the year 2009 to 2011, the markets of USA, Netherlands, Indonesia, and Russia were worst affected, due to global melt down.
2. It has been observed that few countries like France, Australia, Europe, and Indonesia have not still recovered. Hence, the global individual and institutional investors need to be cautious, before investing in these countries.
3. World equity market indicator MSCI is still not performing well and its returns are found to be negative for consecutively two years, i.e.,2011-12 and 2012-13
4. Post recession BDI has shown healthy recovery by moving in upward trend at higher territories, whereas, the world equity market is still under-performing due to fluctuations of the internal and external economic factors.
5. BRICS countries were severely affected on account of economic recession. Out of these five countries, the performance of Indian and Chinese markets was fairly well.
6. In European Union, except Germany, all other countries' indices were deteriorating continuously.
7. It has been observed that the influence of global macro economic factors was very week, when compared with the respective country's select economic factors.
8. Out of the select economic factors, inflation, GDP and IIP were influencing forces on their respective country's indices.
9. Post recession, the operational behavior of the markets of UK, South Korea, and Mexico was found to be in the same pattern post recession, the markets of Japan and South Korea were moving in opposite direction, for the past four years.
10. It has been observed that the Standard Deviation of France and South Korea was very less, whereas, the deviations of Canada and Brazil's indices were found to be very high.
11. It has been observed that the performance of South African markets was fairly healthy and improving consequent to the enroutment of global FDI to this country
12. Other than G20 nations, the performance of countries like Egypt, Venezuela and U.A.E was more encouraging and enhancing.

CONCLUSION:

I conclude the analysis on World Equity Premium on G20 nations as follows"-For this paper, G20 nations have been considered for the purpose of analysis, as they command 85% share of the total capital market of the World. The analysis aims at finding the nations, which are trading at premium and at discount as well, during post recession period. In this analysis, the perfor-

mance of World Markets and world economic movements have been measured by considering MSCI and BDI. The performance of BRICS nations was found to be very excellent before recession. But, due to the global financial meltdown they were adversely affected along with the sinking global market. Even after the recession ravaged the global market, the global investors' fraternity has shown their confidence in the Equity Markets and still this Asset Class dominates more than 50% of the global cross-country investments. The recovery of global equity markets are healthy and very strong along with the real global economy. But, most of the investments are being diverted to safer havens like India, China, South Africa, and Argentina, as the fundamental requirements of investments are strong in these countries. Hence, there is un-ending scope of research from the investors' point of view so as to enhance the possibilities of cross-country investments by individual and institutional investors.

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