

ARE DIVERSIFICATION BENEFITS STILL TO BE FOUND IN INTERNATIONAL INVESTING?

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INTRODUCTION: RATIONALE FOR INTERNATIONAL INVESTING

- ✘ Idea of diversification is even older than modern portfolio theory
 - + “Don’t put eggs all in one basket”
- ✘ Markowitz formalized idea of diversifying an investment portfolio as early as 1952
 - + A diversified portfolio is key to reducing overall risk

INTRODUCTION: INTERNATIONAL MARKET EFFICIENCY

- ✘ In completely efficient markets, any new information is fully reflected in stock prices
- ✘ International market efficiency deals with market integration and segmentation
- ✘ More segmented a market is, the greater diversification benefits available

BACKGROUND LITERATURE: LONG TERM CORRELATION STUDY

- ✘ Goetzmann, Li and Rouwenhorst (2005)
 - + Period: 1850 – 2000, various equity markets
 - + Found international equity correlations shift dramatically over time.
 - + High correlations during periods of economic integration
 - ✘ High correlation found in late 19th Century, during the Great Depression and in the late 20th Century
 - ✘ Currently correlations near historic high – approaching levels reached during Great Depression
 - + Half benefits of diversification due to increasing number of investment opportunities (EM) and half due to lower average correlation among available markets.
 - + This may be coming to an end - while a portfolio of country indices could achieve a 90 percent risk reduction in 1950, this has now fallen to about 65 percent at the turn of the new millennium.

BACKGROUND LITERATURE: CORRELATIONS AND VOLATILITY

- ✘ Statman, Scheid (2004)
 - ✘ Conclude that there still remains benefits to international investing even during periods when correlations are high
 - ✘ Correlations alone are misleading; need to take into consideration volatility
 - ✘ Dispersion of returns which takes into consideration correlation and standard deviations is a better method to measure diversification benefits
 - ✘ While the correlation between the returns of U.S. and international stocks increased from 0.36 in 1992-1996 to 0.86 in 1999-2003, the average annualized standard deviation of returns increased from 11.08% to 17.20%.
 - ✘ High correlation decreases derived dispersion, but increase in standard deviation counteracted some of that increase

BACKGROUND LITERATURE: DISPERSION AS MEASURE OF DIVERSIFICATION (2)

- ✘ Brandes Institute Research Paper (Jan. 2011)
 - ✘ In 2008, difference between the best and worst performing asset classes and sectors hit 20 year lows
 - ✘ Factor in driving increased correlations and low return dispersion is passive strategies
 - ✘ Declining ratio of AUM in active large cap US strategies relative to passive strategies
 - ✘ Ratio of AUM in Active and Passive US Large Cap Equity Strategies declined from 18x to 2x. (1993 - 2010)
 - ✘ As more money invested passively, this pushes average stock valuations level higher
 - ✘ Median global stock traded at 2.2x the P/B of the cheapest quintile - highest ratio in 20 years
 - ✘ Cheapest quintile P/B stock cheaper than historic average

BACKGROUND LITERATURE: SMALL & VALUE FACTOR BENEFITS

✘ Sinquefield (1996)

- + U.S. investor perspective. Period: 1970 - 1994
- + For typical US portfolio, empirical results did not support international diversification for either increased expected return or risk reduction
- + Foreign currencies outperformed the dollar during this period
 - ✘ The performance of EAFE and S&P500 in local currency is virtually the same

BACKGROUND LITERATURE: SINQUEFIELD

Asset	P5	P6	P7	P8	P9	P10	P11
S&P500	60	45	45	45	45	30	30
CRSP 6-10 small	0	0	0	0	0	5	5
US Large-cap value	0	0	0	0	0	10	12
EAFE	0	15	0	0	0	0	0
Intl Small	0	0	0	15	7.5	7.5	9
Intl Value	0	0	15	0	7.5	7.5	10
Bond Index	40	40	40	40	40	40	34
Ann. Return	12.8	13.2	14.1	14.5	14.3	14.9	15.6
St.Dev.	10.1	9.8	9.7	9.4	9.5	9.6	10.1

Table 6: Portfolio Combinations: Substituting Value and Small-Stock Portfolios for EAFE 1975-94

BACKGROUND LITERATURE: CORRELATIONS WITH BEAR MARKETS

- ✘ Longin and Solnik (2001)
 - + Period: 1959 – 1996. Observed markets in U.S. U.K, France, Germany and Japan
 - + Focuses on positive and negative tail end correlations
 - + Finds that correlations increase in bear markets but not in bull markets
 - + A few researchers have looked portfolio choice implications during regime-switching.
 - ✘ Ang and Bekaert (1999, abstract) conclude that "the costs of ignoring regime switching are small for moderate levels of risk aversion", while Das and Uppal (1999, abstract) state that "there are substantial differences in the portfolio weights across regimes".

- ✘ Butler and Joaquin (2002)
 - + Local investor perspective. Period: 1970 – 2000. U.S., U.K., Japan, Australia, European & World ex. domestic indices
 - + Classified regimes into bear, calm and bull markets
 - + Found that observed correlations during bear markets are significantly higher than predicted. If non-normality behavior during bear markets continues, important for investors to invest in markets with near-normal correlation profiles and avoid markets with higher-than-normal bear market co- movements
 - + **Determining which markets will suffer higher-than-normal bear market correlations during future market downturns is problematic**

BACKGROUND LITERATURE: LT DIVERSIFICATION BENEFITS

- ✘ Asness, Israelov, Liew (2011)
 - ✘ Local investor perspective, 22 countries over period of 1950 – 2008
 - ✘ International diversification benefits are available... just need to wait awhile
 - ✘ Short term: little difference in worst case performance of local portfolio and global portfolio
 - ✘ Long term: the global portfolios' worst cases were significantly better than those of the local portfolios. As the horizons become longer, the diversification benefit improves
 - ✘ Benefits of diversification in down markets depend on the investment horizon. Over the short run, diversification is at its weakest. Over longer periods, however, there are meaningful differences in realized returns
 - ✘ Over the long term, markets do not tend to crash at the same time (ex. Japan & Australia) and diversification protects investors against holding positions in poor performing markets

BACKGROUND LITERATURE: ROLE OF EMERGING MARKETS

✘ Li, Sarkar, Wang (2003)

- + U.S. investor perspective. Period: 1976 – 1999; USD monthly total returns on G7 & eight EMs
- + Though international markets are becoming more integrated this does not eliminate the diversification benefits of emerging market investment

✘ Driessen, Laeven (2007)

- + Local & USD investor perspective, Period: 1985 – 2002. Observed 52 markets
- + EM diversification larger than DM diversification
 - ✘ especially those with high country risk; markets which are less integrated
- + Though diversification benefits decreased over sample period, for non-US perspective, potential benefits of international investing are still available

BACKGROUND LITERATURE: EM BENEFITS

- ✘ Christoffersen, Errunza, Jacobs, Jin (2010)
 - + Period: 1973 – 2009. 16 DM markets, 13-17 EM markets
 - + Found that correlations have been increasing for both DM and EMs
 - + Diversification benefits from adding EM to a portfolio appear to be large compared to benefits of adding additional developed markets, even if they are getting smaller in an absolute sense

For developed markets, the average correlation with other developed markets is higher than the average correlation with emerging markets.

For emerging markets, the correlation with developed markets is generally somewhat higher than the correlation with the other emerging markets

BACKGROUND LITERATURE: INTERNATIONAL REAL ESTATE DIVERSIFICATION

- ✘ Sweeney (1989)
 - + Calculated the correlations between office rent indexes in major cities across the world.
 - + Found many markets had negative correlations and concluded that diversification benefits available from adding international real estate to a domestic real estate portfolio

- ✘ Eichholtz (1996)
 - + Period: 1985-1994, Canada, France, HK, Netherlands, Sweden, Singapore, US, UK markets.
 - + Calculated local currency returns of property shares, stock & bond indices
 - + Correlations between property share indices on average lower than correlations between stock and bond indices - implies international property shares reduce portfolio risk better than stocks and bonds.
 - + In addition, portfolio of international property shares offer higher risk/reward benefits compared to 100% domestic only property share portfolio

- ✘ Hoesli, Lekander, Witkiewicz (2003)
 - + Looks at benefits of including real estate to a domestic and international portfolio of stocks and bonds for 1987 - 2001
 - + Found that real estate is effective at diversifying portfolio risk with **optimal allocation of 15 - 25% leads to reduction in portfolio risk by 10-20%**

BACKGROUND LITERATURE: ROLE OF COMMODITIES

✘ Abanomey, Mathur (1999)

- + Studied monthly portfolio returns of stock and bonds with commodity futures from January 1973 to December 1995
- + On an absolute basis commodity futures may be riskier than stock and bonds but due to low correlations with stocks and bonds, they can provide risk benefits
- + Found that the portfolios including commodity futures outperform the portfolios excluding commodity futures by between 1.67 percent and 2.34 percent a year on a risk-adjusted basis. **On average, optimal portfolios allocate 18 percent of assets to commodity futures**
- + The results show that portfolios constructed from international stocks, bonds, and commodity futures are more efficient than similarly constructed portfolios that exclude commodity futures

HOW TO GAIN INTERNATIONAL EXPOSURE: MULTINATIONALS

- ✘ Large Cap Multinationals
 - + Revenues increasingly coming from overseas markets
 - + Not just large exporters but firms like Ebay, Google, Aflac get a large portion of sales from outside home market
 - + Average percentage revenue from overseas for S&P 500 is 41 percent
- ✘ Jacquillat and Solnik (1978)
 - + Concluded that stock prices for multinational firms are more correlated with the home market returns and diversifying abroad is better
- ✘ Chen, Goodwin and Lin (2011)
 - + Look at benefits of investing in local multinationals vs. international stocks
 - + Conclude that there is no strong evidence that investing in multinational stocks provide advantages over investing in portfolio of local economy non-US stocks
 - + Investors benefit most from investing in local companies to capture growth in home market and to capture local market risk factor

MARKET CORRELATIONS (AUD)

	Correlations			
	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010
AU	1	1	1	1
USA	0.7	0.55	0.65	0.86
JP	0.59	0.56	0.52	0.75
HK	0.63	0.61	0.56	0.78
China	0.51	0.35	0.49	0.77
EAFE	0.82	0.72	0.75	0.93
EAFE_xJP	0.81	0.71	0.71	0.93
AC_Asia	0.72	0.66	0.63	0.87
EM_Asia	0.7	0.58	0.62	0.87
EM_xAsia	0.75	0.56	0.74	0.9
AC_Pacific_x JP	0.83	0.74	0.81	0.94
REIT_AU	0.82	0.8	0.79	0.85
Commodity Index	0.49	0.3	0.27	0.67

	Standard Deviation			
	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010
AU	21.0	17.8	18.0	26.1
USA	15.4	12.9	16.0	16.4
JP	19.9	22.7	20.0	16.58
HK	27.4	33.9	23.8	23.12
China	37.0	43.3	35.7	30.35
EAFE	16.8	14.6	15.4	19.9
EAFE_xJP	17.7	13.6	16.7	21.6
AC_Asia	19.6	21.0	18.5	19.08
EM_Asia	26.6	27.9	25.1	26.33
EM_xAsia	26.1	26.4	22.9	28.5
AC_Pacific_x JP	23.6	25.4	20.5	24.5
REIT_AU	20.6	16.5	14.7	27.8
Commodity Index	15.3	10.1	14.0	19.9

	Historical Return			
	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010
AU	14.2	12.0	14.9	15.7
USA	9.2	21.3	1.9	4.3
JP	3.8	3.3	4.7	3.28
HK	13.3	16.0	10.3	13.6
China	6.7	-9.0	5.6	23.4
EAFE	8.3	13.5	4.6	6.72
EAFE_xJP	10.5	18.7	4.9	7.79
AC_Asia	5.8	2.8	5.9	8.6
EM_Asia	9.9	-0.5	12.3	18.0
EM_xAsia	15.9	8.7	18.3	20.8
AC_Pacific_x JP	11.3	6.7	11.3	16.0
REIT_AU	12.1	18.2	16.2	1.8
Commodity Index	4.5	-1.8	11.5	3.83

MARKET CORRELATIONS (USD)

	Correlations				Standard Deviation				Historical Return			
	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010
USA	1	1	1	1	15.4	12.8	16.0	16.5	9.2	21.3	2.0	4.4
Russell_2000	0.79	0.76	0.67	0.93	19.7	15.6	21.2	21.7	10.4	13.6	10.8	6.8
AU	0.70	0.55	0.65	0.86	21.0	17.8	18.1	26.2	14.1	12.0	14.9	15.5
JP	0.48	0.30	0.49	0.74	20.0	22.8	20.1	16.6	3.7	3.3	4.6	3.2
HK	0.58	0.53	0.59	0.73	27.3	33.7	23.9	23.2	13.4	16.0	10.4	13.7
China	0.47	0.41	0.47	0.64	37.1	43.2	35.9	30.4	6.7	-9.1	5.6	23.5
EAFE	0.79	0.56	0.83	0.91	16.9	14.6	15.5	19.9	8.2	13.4	4.6	6.7
EAFE_xJP	0.83	0.68	0.82	0.91	17.7	13.5	16.8	21.7	10.5	18.7	5.0	7.9
Asia	0.61	0.41	0.61	0.83	19.6	21.0	18.6	19.2	5.8	2.9	6.0	8.6
EM_ASIA	0.62	0.45	0.65	0.81	26.6	27.8	25.2	26.4	9.9	-0.6	12.4	18.0
EM_xAsia	0.70	0.57	0.75	0.81	26.1	26.5	22.9	28.5	15.9	8.8	18.3	20.7
World_xUS_Small	0.67	0.40	0.68	0.86	19.1	16.1	16.3	23.9	10.1	5.7	12.0	12.5
APAC_Dvlpd_Small	0.43	0.23	0.37	0.75	21.8	23.9	20.4	20.7	6.9	-2.1	15.5	7.2
APAC_SouthAsia_Small	0.49	0.46	0.40	0.73	37.2	45.2	35.5	29.1	16.8	13.6	16.1	20.5
World_xJP_Small	0.83	0.74	0.77	0.95	19.0	14.6	18.3	23.0	11.6	11.6	12.5	10.6
World_RE	0.67	0.56	0.52	0.91	20.6	21.9	14.2	24.2	10.6	10.1	14.3	7.5
World_xAPAC_RE	0.62	0.51	0.35	0.86	18.7	11.9	12.8	27.3	11.4	11.0	16.1	7.0
REIT_Dvlpd_xAsia	0.60	0.43	0.35	0.83	18.7	11.0	12.9	27.5	12.9	14.7	16.6	7.4
REIT_AU	0.62	0.48	0.44	0.82	20.8	16.8	14.9	27.9	11.7	17.3	15.9	1.8
REIT_JP	0.30	0.32	0.03	0.61	30.6	33.5	30.0	27.8	10.0	4.6	14.0	11.5
Commodity_Index	0.28	0.13	0.11	0.52	15.3	10.0	14.1	20.0	4.5	-1.8	11.5	3.9

MARKET CORRELATIONS (JPY)

	Correlations				Standard Deviation				Historical Return			
	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010	1993 - 2010	1993 - 1998	1999 - 2004	2004 - 2010
JP	1	1	1	1	19.9	19.4	16.2	19.9	3.8	1.0	2.4	0.05
USA	0.48	0.31	0.39	0.83	15.4	18.6	17.1	20.6	9.2	20.5	0.5	1.27
AU	0.59	0.57	0.44	0.82	21.1	21.8	18.7	29.2	14.2	11.1	13.4	12.62
HK	0.43	0.24	0.41	0.76	27.4	33.5	24.6	26.34	13.4	14.4	8.9	10.62
China	0.24	-0.01	0.37	0.72	37.0	45.2	36.3	33.52	6.6	-9.8	4.1	20.7
EAFE	0.77	0.76	0.53	0.9	16.9	16.3	15.3	22.9	8.3	12.1	2.9	3.52
EAFE_xJP	0.54	0.42	0.33	0.85	17.7	18.2	17.8	24.5	10.6	17.8	3.6	4.72
EM_ASIA	0.5	0.34	0.48	0.81	26.6	29.3	26.1	29.5	10.0	-1.8	11.0	15.1
EM_xAsia	0.5	0.35	0.48	0.84	26.1	30.4	23.5	31.4	15.9	8.2	16.8	17.7
REIT_Japan	0.74	0.8	0.43	0.82	30.6	30.3	26.5	29.79	10.8	4.1	11.7	8.15
World_xUSA	0.75	0.72	0.54	0.9	17.3	16.8	15.7	24.0	9.2	11.1	4.2	6.13
Pacific_xJP	0.55	0.4	0.49	0.83	23.6	26.6	21.4	27.8	11.4	5.5	9.9	13.1
Commodity Index	0.37	0.22	0.19	0.67	15.3	16.1	15.1	22.4	4.5	-2.6	10.0	0.57

CONCLUSION

- ✘ International diversification (like Elvis) is not dead... just need to wait a bit longer and look a bit further afield
 - + EM, EM outside Asia, small caps, Commodities, REITs, frontier markets...
- ✘ Benefits extend to non-USD investors; Japanese investors especially would have gained from international exposure in recent years
- ✘ Investors need to understand how different market regimes affect correlations and what methods are available to mitigate these changes

INDEX MEMBERSHIP

	MSCI EAFE	MSCI EM	MSCI EM Asia	MSCI EM x Asia	MSCI (AC) World x. USA	MSCI (AC) Asia	MSCI (AC) Pacific xJP	DJ Global World Small Cap Index	DJ Global World x. AsiaPac Real Estate	DJ Global Asia Pacific Small Cap Index	DJ Global Asia Pacific Dvlpd. Small Cap Index	DJ Global Asia Pacific SouthEast Asia Small Cap Index	FTSE EPRA/NAREIT Developed x Asia	Dow Jones-UBS Commodity Index sm
AUSTRALIA	x				x		x	x		x				Gold
AUSTRIA	x				x			x	x				x	Natural gas
BELGIUM	x				x			x	x				x	Corn
BRAZIL		x		x	x			x	x					Soybeans
CANADA					x			x	x				x	Copper
CHILE		x		x	x			x	x					Aluminum
CHINA		x	x		x	x	x	x		x				Heating Oil
COLOMBIA		x		x	x									Live Cattle
CZECH REPUBLIC								x	x					
DENMARK	x			x	x			x	x				x	Unleaded Gasoline
EGYPT		x		x	x									Wheat
FINLAND	x				x			x	x				x	Silver
FRANCE	x				x			x	x				x	Sugar
GERMANY	x				x			x	x				x	Soybean Oil
GREECE	x				x			x	x				x	Coffee
HONG KONG	x			x	x	x	x	x		x	x			Lean Hogs
HUNGARY		x			x			x	x					Zinc
ICELAND								x	x					Nickel
INDIA		x	x		x	x		x		x				Cotton
INDONESIA		x	x		x	x	x	x		x		x		
IRELAND	x				x			x	x				x	
ISRAEL	x				x			x	x				x	
ITALY	x				x			x	x				x	
JAPAN	x				x			x		x	x			
KOREA		x	x		x	x	x	x		x				
MALAYSIA		x	x		x	x	x	x		x		x		
MEXICO		x		x	x			x	x					
MOROCCO		x		x	x									
NETHERLANDS														
NETHERLANDS	x				x			x	x				x	
NEW ZEALAND							x							
NORWAY	x				x			x		x	x			
NORWAY	x				x			x	x				x	
PERU		x		x	x									
PHILIPPINES		x	x		x	x	x	x		x		x		
POLAND		x		x	x			x	x				x	
PORTUGAL	x				x			x	x				x	
RUSSIA		x		x	x			x	x					
SINGAPORE	x				x	x	x	x		x	x	x		
SOUTH AFRICA														
SOUTH AFRICA		x		x	x			x	x					
SPAIN	x				x			x	x				x	
SWEDEN	x				x			x	x				x	
SWITZERLAND														
SWITZERLAND	x				x			x	x				x	
TAIWAN		x	x		x	x	x	x		x		x		
THAILAND														
THAILAND		x	x		x	x	x	x		x		x		
TURKEY		x		x	x			x	x					
UNITED KINGDOM														
UNITED KINGDOM	x				x			x	x				x	
UNITED STATES								x	x				x	

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