

Is Gold a Safe Haven Against Equity Market Investment in Emerging and Developing Countries?

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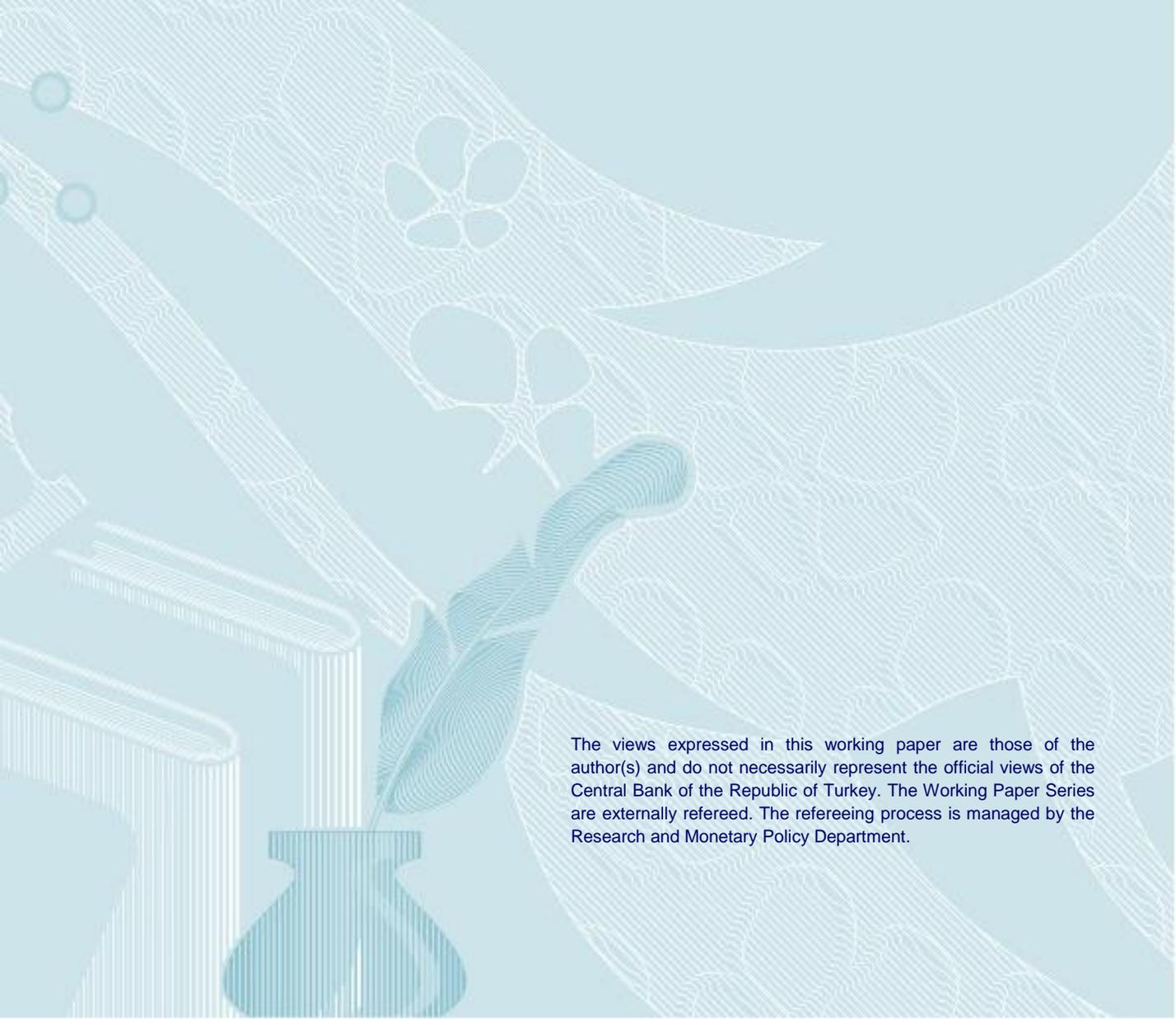
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Is Gold a Safe Haven Against Equity Market Investment in Emerging and Developing Countries?¹

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Abstract

The hedge and safe haven properties of gold in advanced economies' financial markets are well documented in the literature. Studies of how this issue relates to emerging markets and developing countries are, however, very limited. This paper aims to fill this gap by empirically analysing the hedge and safe haven properties of gold against equity market investment for a large group of emerging and developing countries from the perspective of both domestic and foreign investors. We also check whether our findings differ in the post-global crisis period. Our results show that for domestic investors, gold is both a hedge and a safe haven in most of these countries. This result also holds in the post-2008 crisis period. In addition, when falls in equity markets become more severe, gold acts as a safe haven in a larger set of countries for both domestic and foreign investors.

Keywords: Equity Market, Gold, Hedge, Safe Haven, Emerging and Developing Countries, GARCH.

JEL Classification: C22, G10, G11, G15

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1. Introduction

Since the beginning of the global financial crisis in 2008 there has been a renewed interest in understanding the properties of gold as an investment tool. This is due to the general belief that gold is a good investment choice to limit losses in times of market turbulence. Although this so called “safe haven” property of gold in developed financial markets is well documented in the literature, little is known about the properties of gold in emerging and developing financial markets. This paper attempts to fill this gap by empirically analysing the hedge and safe haven properties of gold against equity market investment for 28 emerging and developing countries’ financial markets.

Even though gold has been considered a safe haven for a long time, this hypothesis has not been formally tested until recently. Baur and Lucey (2010) make clear definitions of hedge and safe haven and test if gold is a hedge and/or a safe haven by using daily data from 1995 to 2005. They report that gold is a safe haven for equities in the US, the UK and Germany on average, but not for bonds in any of the markets. According to their findings gold acts as a safe haven for a limited time, around 15 trading days, suggesting that investors hold gold during extreme equity market conditions. Baur and McDermott (2010) further examine the role of gold by testing the hypotheses that gold represents a safe haven against equities of developed and major emerging markets. Using data from 1979 to 2009, they show that gold is both a safe haven and a hedge for major European equity markets and the US but not for Australia, Canada, Japan or major emerging markets such as the BRIC countries (Brazil, Russia, India and China). They also show that during the peak of the recent financial crisis gold demonstrated safe haven properties in most developed markets, but this is not the case for the Asian crisis. Ciner et. al (2013) examine return relations between five financial asset classes to determine whether these assets can be considered as a hedge or safe haven against

each other. Using daily data from the US and the UK for the period of January 1990 and June 2010, they find that gold can be considered as a safe haven against exchange rates in both countries, highlighting its monetary asset role.

In this paper, following the methodology of Baur and McDermott (2010) and using daily data, we test the hedge and safe haven properties of gold against 28 emerging and developing countries' equity markets. Since emerging financial markets attract significant amount of foreign capital, we consider not only the perspective of domestic investors but also that of foreign investors. In doing so, we assume that domestic investors care only about returns in domestic currency and foreign investors care only about returns in US dollar. In addition, we repeat our analysis for the September 2008-September 2013 period in order to investigate whether the relation between gold and equity returns changed after the global financial crisis.

Our main findings are as follows. First, gold is a hedge and/or a safe haven for domestic investors in particular. Second, the safe haven property of gold is stronger during extreme losses in equity markets both for domestic and foreign investors. Third, results are mixed for major gold producing countries.

The remainder of this paper is organized as follows: Section 2. describes the data and reports the summary statistics. Section 3. presents the methodology and the results of our analysis, and finally Section 4. concludes.

2. Data

Our data set includes all emerging market countries in the MSCI emerging markets index² as of April 2014. We have further extended this data set by including 9 other

² Countries included in this index are selected in terms of their economic development, size, liquidity and market accessibility. We exclude Greece, South Korea and Taiwan since they are considered as developed countries according to the IMF classification. For the selection criteria of MSCI emerging markets index see: http://www.msci.com/products/indexes/country_and_regional/em/. The countries that are not in MSCI emerging markets index are selected in terms of their GDP and data availability.

newly developing financial markets: Bahrain, Bulgaria, Jordan, Kenya, Morocco, Qatar, Romania, United Arab Emirates (UAE) and Vietnam.

We use daily data because, as demonstrated in Baur and Lucey (2010), investors seek a safe haven for a short period of time. Data samples change for each country depending on the availability of the equity market index data³. We collect gold, equity market and foreign exchange data from Bloomberg. Equity returns are in daily percentage changes of the relevant country's equity market index and gold returns are daily percentage changes of gold prices.

The descriptive statistics for the daily changes in the gold prices and equity indexes in local currencies are reported in Table 1. In terms of the domestic currency, the highest volatility of gold returns is seen in China and Russia. The most volatile equity market returns are in Russia, Brazil, Turkey and China. The volatility of equity market returns in US dollar terms are higher than the domestic currency returns in all countries, except for China, India, Qatar and UAE

3. Methodology and empirical results

3.1. Methodology

Several definitions of safe haven and hedge have been proposed in the literature⁴. An empirically usable definition of what exactly constitutes a safe haven and hedge was provided by Baur and Lucey (2010). Our study follows their definitional approach: that is, the return of a safe haven asset is uncorrelated or negatively correlated with the return of another asset at times of extreme losses. A hedge is an asset with a return that is

³ We report more information about our data set in Appendix 1.

⁴ Upper (2000) defines safe haven asset as an instrument that is perceived as having a low risk and being highly liquid. Rinaldo and Söderlind (2010) define a safe haven asset as an asset that either provides hedging benefits on average or in times of stress. They underline that a safe haven asset is perceived as performing reasonably well in difficult market situations: it should have a low exposure to traditional risk factors and not be markedly sensitive to market volatility and liquidity squeezes.

uncorrelated or negatively correlated with the return of another asset on average. Hence, the difference between safe haven and hedge is that the return of a safe haven asset is uncorrelated or negatively correlated with the return of another asset in times of stress only.

Following Baur and McDermott (2010) we assume that there are extreme conditions in which the relationship between gold and the equity market could change. i.e. there is a non-linearity between the returns of two assets during crisis. Hence, the dynamics of the gold returns and equity prices are assumed to be as follows:

$$r_{Gold,t,i} = a + b_t r_{Stock,t,i} + e_t \quad (1a)$$

$$b_t = c_0 + c_1 D(r_{Stock,t,i} q_{10}) + c_2 D(r_{Stock,t,i} q_5) + c_3 D(r_{Stock,t,i} q_1) \quad (1b)$$

$$h_t = \pi + \alpha e_{t-1}^2 + \beta h_{t-1} \quad (1c)$$

In equation (1b), $D(\dots)$ are dummy variables that represent extreme equity market movements and take the value of 1 if the return in equity market is in the predetermined 10%, 5% and 1% quantiles of the return distribution.

If parameters (c_0, c_1, c_2 and c_3) are negative, it means that gold presents weak safe haven properties. But if these parameters are negative and statistically significant, then gold shows strong safe haven properties. When the parameter c_0 is zero or negative then the gold can be called as weak and strong hedge respectively under the condition of the sum of the parameters c_1, c_2 and c_3 is positive, but not exceeding the value of c_0 . In order to handle the heteroscedasticity problem in the data, GARCH (1,1) structure is used in equation (1c) and whole system is estimated with Maximum Likelihood method.

3.2. Empirical Results

In line with our assumption about return motives of the domestic and the foreign investors, we first estimate equation (1a) by using equity and gold returns in domestic currency in order to capture the domestic investors' perspective. On the other hand, for foreign investors we estimate equation (1a) by using equity market and gold returns in US dollar.

Full sample estimation results, when both gold and equity returns are in domestic currencies, are reported in Table 2. In 9 countries, which are Brazil, Bulgaria, Chile, Hungary, Philippines, Malaysia, Mexico, Poland and Turkey, gold is a strong hedge for equity market investments. Whereas it is a weak hedge in 6 countries that are Colombia, Israel, Jordan, Morocco, Peru and Thailand. At very extreme equity market falls (at the 1% quantile) gold is a strong safe haven in Chile, Egypt, Israel, Jordan, Kenya, Philippines, Peru, Poland, Qatar, Romania, Turkey and Vietnam.

When we restrict our sample to the September 2008 - September 2013 period, gold is a strong hedge in lower number of countries, namely Brazil, Czech Republic, Indonesia, Malaysia, Mexico and Poland but weak hedge in higher number of countries i.e. India, Philippines, Morocco, Peru, Romania, Russia and Turkey (See Table 3). During very extreme equity market losses (at the 1% quantile) gold is a safe haven in 14 countries which is higher than the full sample period number of 12. It is a weak safe haven in Bulgaria, Hungary Jordan, Kenya, Peru, Thailand and Vietnam.

We report full sample results, when both equity and gold returns are in US dollar, in Table 4. Gold displays strong hedge properties only for equity markets in Romania and Thailand. For very extreme stock market falls gold is a strong safe haven for foreign investors in 6 countries, Egypt, India, Jordan, Romania, Thailand, Vietnam, and weak

safe haven in 9 countries, Bahrain, Chile, Indonesia, Israel, Kenya, Morocco, Peru, Qatar, and South Africa. In the global financial crisis period, gold was a strong hedge in Philippines and Morocco and a strong safe haven in Bahrain, Brazil, Colombia, Egypt, Jordan and Vietnam.

The results outlined above indicate three noteworthy findings. First, the number of countries in which gold displays hedge and safe haven properties are higher when the returns for gold and equities are in domestic currency. In other words, gold is a hedge and/or a safe haven for domestic investors in particular. This is a consequence of the fact that in emerging and developing countries a depreciation of the domestic currency is generally associated with a decline in equity prices and vice versa. This explains why we observe a statistically significant negative correlation between gold and equity markets in Brazil, Hungary, Mexico, Poland and Turkey which are implementing floating exchange rate regimes but not in countries implementing pegged or fixed exchange rate regimes such as Bahrain, China, India, UAE, Qatar and Vietnam. On the other hand, when equity prices are denominated in US dollar, we found a strong co-movement between equity and gold returns in most countries. Baur and McDermott (2010) find a similar result for BRIC countries and argue that in response to a shock, foreign investors in emerging markets may sell their shares and shift their portfolios to developed countries rather than seek a safe haven. Our results confirm their findings for a larger set of countries.

Secondly, the severity of the decline in equity prices matters for the demand for safe haven assets. Gold shows safe haven properties in more countries as the decline in stock prices deepens. For example, in Table 2, at the 10% quantile 13, at the 5% quantile 16 and at the 1% quantile 21 countries' equity returns are negatively correlated with gold returns. This result also holds when both returns are in US dollar.

Thirdly, one could expect equity and gold return correlations to be positive if a country is a major gold producer⁵. However, we find mixed results for these countries. For example, gold is a strong hedge in Mexico, a weak hedge in Peru and it is not a hedge in China, Indonesia, Russia and South Africa. This may be due to the fact that the relative size of gold producing companies in the stock markets of these countries is rather small.

4. Conclusion

In this paper, we test whether gold is a hedge and/or a safe haven against equity market investments in a large group of emerging and developing financial markets. Our results show that gold performed as a hedge and a safe haven in most of the financial markets for domestic investors over the full sample period. The number of countries in which gold acts as a safe haven further increases during the period of financial crisis. On the other hand, gold is a safe haven for foreign investors in only a few markets. During times of extreme losses in equity markets, gold acts as a safe haven in more countries for both domestic and foreign investors. Finally, results are mixed for major gold producing countries.

⁵ Five countries in our sample, China, Indonesia, Mexico, Peru, Russia and South Africa, are among the top 10 gold producing countries of the world. For full list see Thomson Reuters GFMS Gold Survey 2014.

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Appendix I.

Country	Equity Index	Dates	
		<u>From</u>	<u>To</u>
Bahrain	BAHRAIN ALL SHARE	04/19/2004	09/20/2013
Brazil	BOVESPA	01/16/1992	09/20/2013
Bulgaria	SOFIX	10/25/2000	09/20/2013
Chile	IGPA	01/03/1990	09/20/2013
China	SHENZEN COMPOSITE	08/01/2005	09/20/2013
Colombia	IGBC	07/06/2001	09/20/2013
Czech Republic	PX	09/20/1994	09/20/2013
Egypt	EGX30	01/05/1998	09/20/2013
Hungary	BUX	06/18/1993	09/20/2013
India	S&P BSE SENSEX	07/17/1992	09/20/2013
Indonesia	JAKARTA COMPOSITE	06/11/1991	09/20/2013
Israel	TEL AVIV100	01/02/1992	09/20/2013
Jordan	ASE GENERAL	01/04/2000	09/20/2013
Kenya	NSE20	01/03/1994	09/20/2013
Malaysia	FBMKLCI	01/04/1980	09/20/2013
Mexico	IPC	04/07/1994	09/20/2013
Morocco	MASI	01/04/1995	09/20/2013
Peru	IGBVL	08/13/1992	09/20/2013
Philippines	PSEI	11/06/1991	09/20/2013
Poland	WIG	03/01/1995	09/20/2013
Qatar	QE	04/19/1999	09/20/2013
Romania	BET	04/15/1999	09/20/2013
Russia	MICEX	09/23/1997	09/20/2013
South Africa	FTSE/JSE	07/03/1995	09/20/2013
Thailand	SET	06/08/1987	09/20/2013
Turkey	BIST100	01/02/1996	09/20/2013
Vietnam	VN	03/01/2002	09/20/2013

Table 1. Descriptive Statistics

	Gold Return in Domestic Currency				Equity Return in Domestic Currency				Equity Return in US\$			
	Standard				Standard				Standard			
	Mean	Deviation	Min	Max	Mean	Deviation	Min	Max	Mean	Deviation	Min	Max
Bahrain	0.07	1.33	-9.35	9.01	-0.01	0.64	-4.80	3.68	-0.01	0.65	-4.83	3.68
Brazil	0.20	1.65	-20.05	25.11	0.25	2.83	-32.61	41.10	0.10	3.25	-34.40	41.19
Bulgaria	0.04	1.18	-11.56	9.14	0.06	1.75	-18.86	23.46	0.08	1.91	-19.22	23.17
Chile	0.04	1.14	-9.01	10.17	0.06	0.84	-6.05	9.48	0.05	1.11	-8.37	13.33
China	0.05	1.34	-9.43	8.91	0.09	1.94	-8.54	8.89	0.10	1.95	-8.47	8.92
Colombia	0.06	1.36	-10.66	11.12	0.10	1.38	-10.46	15.82	0.11	1.72	-11.72	16.34
Czech Republic	0.03	1.19	-8.95	8.85	0.02	1.42	-14.94	13.16	0.03	1.72	-16.30	21.89
Egypt	0.07	1.29	-9.10	15.61	0.06	1.85	-16.47	20.16	0.05	1.89	-17.08	20.61
Hungary	0.05	1.22	-8.90	10.08	0.08	1.76	-16.39	14.59	0.07	2.10	-17.73	18.24
India	0.05	1.10	-9.35	9.30	0.05	1.70	-12.01	17.34	0.04	1.71	-12.01	17.34
Indonesia	0.07	1.79	-20.46	21.30	0.07	1.56	-11.95	14.03	0.05	2.37	-27.91	37.52
Israel	0.04	1.14	-7.67	10.42	0.06	1.41	-9.93	10.28	0.05	1.58	-10.22	11.91
Jordan	0.06	1.25	-9.39	9.01	0.02	0.99	-7.96	8.02	0.02	1.00	-7.96	7.87
Kenya	0.07	2.37	-36.45	113.73	0.04	0.92	-9.82	13.19	0.03	1.97	-53.65	58.36
Malaysia	0.02	1.30	-14.11	10.30	0.04	1.40	-15.69	23.14	0.03	1.59	-16.00	42.74
Mexico	0.06	1.40	-15.28	20.20	0.07	1.57	-13.34	12.92	0.05	2.08	-19.18	22.16
Morocco	0.03	1.11	-8.98	9.47	0.03	0.77	-7.45	6.69	0.04	0.95	-7.56	6.65
Peru	0.05	1.13	-6.80	10.42	0.11	1.60	-12.45	13.67	0.10	1.68	-12.53	14.16
Philippines	0.04	1.22	-10.47	12.04	0.05	1.50	-12.27	17.56	0.04	1.72	-13.01	25.10
Poland	0.04	1.24	-8.97	9.91	0.05	1.59	-12.66	14.49	0.05	1.96	-12.69	14.96
Qatar	0.05	1.23	-9.35	9.29	0.08	1.90	-14.60	16.76	0.08	1.90	-14.60	16.76
Romania	0.08	1.29	-8.77	9.47	0.10	1.88	-18.76	19.27	0.08	2.13	-18.86	18.55
Russia	0.09	1.64	-22.58	27.02	0.11	2.89	-20.81	31.65	0.07	3.05	-24.25	33.17
South Africa	0.06	1.36	-9.74	16.65	0.06	1.26	-11.86	7.54	0.04	1.74	-20.34	11.77
Thailand	0.03	1.13	-9.31	16.96	0.04	1.70	-15.96	12.02	0.04	1.84	-16.16	16.80
Turkey	0.12	1.50	-9.15	43.06	0.15	2.60	-18.11	19.45	0.09	3.03	-23.10	21.88
United Arab Emirates	0.08	1.46	-13.01	9.46	0.06	1.53	-12.51	12.34	0.06	1.53	-12.51	12.34
Vietnam	0.07	1.29	-9.31	9.94	0.05	1.60	-7.75	9.08	0.03	1.62	-7.66	9.14

Note: Numbers indicate daily percentage changes

**Table 2. Estimation Results (Full Sample):
Gold and Equity Market Returns are in Domestic Currency**

	Hedge		0.1		0.05		0.01		Number of Obs.
Bahrain	0.022	(0.558)	0.278*	(0.083)	0.025	(0.861)	-0.261	(0.265)	2183
Brazil	-0.017***	(0.010)	0.09***	(0.000)	0.04**	(0.029)	0.12***	(0.000)	5345
Bulgaria	-0.032**	(0.041)	-0.033	(0.474)	-0.007	(0.770)	-0.032	(0.220)	3065
Chile	-0.04***	(0.001)	-0.084*	(0.060)	-0.016	(0.630)	-0.011***	(0.000)	5753
China	0.005***	(0.008)	0.065	(0.326)	0.070	(0.126)	-0.034	(0.443)	1978
Colombia	-0.019	(0.279)	0.120	(0.130)	-0.008	(0.841)	0.146***	(0.000)	2896
Czech Republic	0.000	(0.944)	-0.064	(0.150)	0.022	(0.519)	-0.017	(0.600)	4697
Egypt	0.043***	(0.001)	0.018	(0.610)	0.026	(0.330)	-0.198***	(0.000)	3634
Hungary	-0.032***	(0.000)	-0.06**	(0.020)	-0.08***	(0.000)	-0.021	(0.565)	5040
India	0.011	(0.305)	-0.033	(0.839)	0.006	(0.760)	0.015	(0.550)	4953
Indonesia	-0.033***	(0.008)	0.037	(0.356)	0.023	(0.490)	0.12***	(0.000)	5328
Israel	-0.008	(0.472)	-0.039	(0.137)	-0.007	(0.697)	-0.113***	(0.000)	5124
Jordan	-0.003	(0.902)	0.094	(0.212)	-0.033	(0.313)	-0.132***	(0.001)	3221
Kenya	0.001	(0.970)	-0.030	(0.863)	-0.090	(0.643)	-0.12***	(0.000)	4039
Phillippines	-0.015**	(0.040)	0.067**	(0.015)	-0.049**	(0.033)	-0.052***	(0.001)	5260
Malaysia	-0.023***	(0.007)	0.012	(0.677)	0.010	(0.533)	-0.004	(0.550)	8026
Mexico	-0.078***	(0.000)	0.005	(0.889)	0.096***	(0.002)	0.08**	(0.010)	4892
Morocco	-0.025	(0.316)	0.026	(0.731)	-0.137***	(0.000)	-0.032	(0.423)	4451
Peru	-0.007	(0.447)	0.012	(0.717)	-0.013	(0.556)	-0.025*	(0.090)	4976
Poland	-0.022**	(0.016)	-0.026	(0.415)	-0.05*	(0.08)	-0.07*	(0.051)	4656
Qatar	0.023	(0.148)	0.009	(0.858)	0.005	(0.86)	-0.054***	(0.000)	3469
Romania	0.019	(0.091)	-0.063*	(0.100)	0.011	(0.66)	-0.072***	(0.000)	3448
Russia	0.01**	(0.012)	-0.023	(0.225)	-0.028**	(0.020)	0.026*	(0.056)	3945
South Africa	0.086***	(0.000)	0.129**	(0.016)	-0.060	(0.190)	0.103*	(0.065)	4553
Thailand	-0.007	(0.283)	-0.020	(0.378)	-0.017	(0.401)	-0.005	(0.734)	6412
Turkey	-0.185***	(0.000)	-0.3***	(0.000)	-0.31***	(0.000)	-0.25***	(0.000)	4409
UAE	0.019	(0.486)	-0.024	(0.814)	0.0346	(0.363)	-0.057	(0.170)	1953
Vietnam	0.017	(0.310)	0.043	(0.269)	-0.094***	(0.000)	-0.179**	(0.011)	2762

Notes: P-values are in parentheses. ***, ** and *, indicate the significance levels at 1%, 5% and 10% levels respectively.

Darker shades indicate strong hedge/safe haven

Lighter shades indicate weak hedge/safe haven

Unshaded areas indicate no hedge/safe haven cases

**Table 3. Estimation Results (September 2008 – September 2013):
Gold and Equity Market Returns are in Domestic Currency**

	Hedge		0.1		0.05		0.01		Number of Obs.
Bahrain	0.006	(0.939)	-0.092	(0.608)	-0.060	(0.602)	-0.195	(0.165)	1205
Brazil	-0.064**	(0.010)	-0.0174***	(0.002)	-0.094**	(0.015)	-0.86***	(0.000)	1253
Bulgaria	-0.006	(0.851)	0.127	(0.078)	-0.114**	(0.013)	-0.113	(0.102)	1218
Chile	-0.031	(0.520)	0.279	(0.011)	0.132	(0.058)	-0.052***	(0.000)	1228
China	0.103***	(0.000)	-0.023	(0.730)	0.036	(0.297)	0.184**	(0.037)	1226
Colombia	0.010	(0.744)	-0.164	(0.135)	-0.082**	(0.013)	0.261	(0.108)	1205
Czech Republic	-0.12***	(0.000)	0.009	(0.873)	0.113***	(0.001)	-0.187***	(0.000)	1267
Egypt	0.071***	(0.008)	-0.022	(0.740)	-0.0951***	(0.001)	-0.234***	(0.000)	1167
Hungary	0.000	(0.950)	-0.001	(0.118)	-0.002	(0.234)	-0.001	(0.766)	1267
India	-0.006	(0.789)	-0.049	(0.478)	-0.005	(0.956)	0.251	(0.249)	1187
Indonesia	-0.0722**	(0.040)	-0.093	(0.195)	-0.116**	(0.044)	-0.125**	(0.040)	1235
Israel	0.044	(0.197)	-0.225***	(0.000)	-0.146***	(0.006)	-0.26***	(0.000)	1192
Jordan	-0.029	(0.581)	0.107	(0.342)	0.116	(0.266)	-0.106	(0.383)	1213
Kenya	0.021	(0.674)	-0.106	(0.520)	-0.249**	(0.012)	-0.149	(0.256)	1230
Philippines	-0.059	(0.119)	-0.046	(0.629)	-0.205***	(0.001)	0.129**	(0.032)	1205
Malaysia	-0.178	(0.005)	-0.033	(0.801)	-0.149	(0.213)	0.022	(0.879)	1210
Mexico	-0.108***	(0.004)	-0.161**	(0.045)	-0.147***	(0.000)	-0.495***	(0.000)	1273
Morocco	-0.042	(0.457)	-0.313**	(0.011)	-0.223**	(0.035)	-0.522***	(0.000)	1222
Peru	-0.292	(0.228)	-0.039	(0.578)	-0.032	(0.501)	-0.022	(0.767)	1233
Poland	-0.247***	(0.000)	-0.106	(0.138)	-0.069	(0.140)	-0.248***	(0.002)	1270
Qatar	0.047	(0.128)	0.045	(0.635)	-0.013	(0.810)	0.055	(0.283)	1230
Romania	-0.016	(0.569)	-0.009	(0.899)	-0.136***	(0.000)	-0.208***	(0.000)	1238
Russia	-0.020	(0.310)	-0.093**	(0.015)	-0.017	(0.440)	-0.101***	(0.000)	1253
South Africa	0.007	(0.841)	-0.014	(0.837)	0.039	(0.487)	-0.702***	(0.000)	1266
Thailand	0.030	(0.337)	0.022	(0.767)	0.062	(0.125)	-0.043	(0.598)	1235
Turkey	-0.036	(0.169)	-0.296***	(0.000)	-0.197***	(0.000)	-0.075***	(0.007)	1271
UAE	0.045	(0.419)	-0.044	(0.684)	-0.054	0.413	-0.013	(0.033)	983
Vietnam	0.072	(0.014)	0.019	(0.737)	-0.122***	(0.004)	-0.203	(0.144)	1226

Notes: P-values are in parentheses. ***, ** and *, indicate the significance levels at 1%, 5% and 10% levels respectively.

Darker shades indicate strong hedge/safe haven

Lighter shades indicate weak hedge/safe haven

Unshaded areas indicate no hedge/safe haven cases

**Table 4. Estimation Results (Full Sample):
Gold and Equity Market Returns are in USD**

	Hedge		0.1		0.05		0.01		Number of Obs.
Bahrain	0.089*	(0.066)	0.056	(0.671)	-0.120	(0.169)	-0.141	(0.142)	2184
Brazil	0.005	(0.107)	0.010	(0.128)	0.01**	(0.040)	0.002	(0.620)	5345
Bulgaria	0.072***	(0.000)	0.229***	(0.000)	0.076***	(0.004)	0.019	(0.373)	3065
Chile	0.029***	(0.006)	-0.009	(0.786)	0.05*	(0.010)	-0.022	(0.217)	5753
China	0.05***	(0.000)	0.000	(0.986)	0.015	(0.610)	0.111***	(0.002)	1978
Colombia	0.898***	(0.000)	0.795***	(0.000)	0.917***	(0.000)	0.725***	(0.000)	2896
Czech Republic	0.088***	(0.000)	0.12***	(0.000)	0.071***	(0.000)	0.075***	(0.000)	4697
Egypt	0.018*	(0.051)	0.071**	(0.028)	-0.037	(0.242)	-0.203*	(0.051)	3633
Hungary	0.046***	(0.000)	0.093***	(0.000)	0.031**	(0.017)	0.031**	(0.015)	5040
India	0.006	(0.400)	0.04*	(0.067)	0.058***	(0.000)	-0.049***	(0.000)	4953
Indonesia	0.016***	(0.001)	-0.030	(0.222)	-0.066	(0.162)	-0.075	(0.105)	5328
Israel	0.022***	(0.009)	0.029	(0.143)	0.007	(0.619)	-0.014	(0.330)	5124
Jordan	-0.006	(0.754)	0.085	(0.246)	-0.003	(0.930)	-0.156***	(0.000)	3221
Kenya	0.013	(0.433)	-0.081**	(0.071)	-0.037	(0.133)	-0.022	(0.316)	4039
Philippines	0.023***	(0.005)	0.070***	(0.000)	-0.016	(0.280)	0.037**	(0.033)	5260
Malaysia	0.016**	(0.040)	0.041*	(0.073)	0.039***	(0.004)	0.015**	(0.041)	8026
Mexico	0.019***	(0.003)	0.024	(0.240)	0.007	(0.468)	0.010	(0.114)	4892
Morocco	0.116***	(0.000)	0.125***	(0.010)	0.056*	(0.071)	-0.031	(0.441)	4451
Peru	0.008	(0.313)	0.005	(0.842)	-0.012	(0.488)	-0.024**	(0.029)	4976
Poland	0.048***	(0.000)	0.041	(0.020)	0.068***	(0.000)	0.063***	(0.000)	4656
Qatar	-0.003	(0.600)	-0.016	(0.700)	0.060	(0.120)	-0.014	(0.891)	3468
Romania	-0.039***	(0.000)	-0.031	(0.411)	0.018	(0.520)	-0.042**	(0.039)	3448
Russia	0.033	(0.000)	0.110	(0.000)	0.043***	(0.000)	0.016	(0.203)	3945
South Africa	0.164	(0.000)	0.152	(0.000)	0.103**	(0.014)	-0.057	(0.250)	4553
Thailand	-0.13***	(0.000)	-0.197***	(0.007)	-0.067	(0.260)	-0.107***	(0.000)	6412
Turkey	0.018	(0.000)	0.031	(0.032)	-0.007	(0.420)	0.022***	(0.001)	4409
UAE	0.020	(0.481)	-0.025	(0.810)	0.035	(0.356)	-0.057	(0.172)	983
Vietnam	0.015	(0.367)	0.075**	(0.036)	-0.072***	(0.003)	-0.181***	(0.000)	2898

Notes: P-values are in parentheses. ***, ** and *, indicate the significance levels at 1%, 5% and 10% levels respectively.

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**Table 5. Estimation Results (September 2008 – September 2013):
Gold and Equity Market Returns are in USD**

	Hedge		0.1		0.05		0.01		Number of Obs.
Bahrain	0.01*	(0.079)	-0.128	(0.465)	-0.33	(0.783)	-0.231*	(0.077)	1205
Brazil	0.144***	(0.000)	0.16***	(0.000)	0.19***	(0.000)	-0.130***	(0.000)	1253
Bulgaria	0.132***	(0.000)	0.322***	(0.000)	-0.015	(0.705)	-0.004	(0.951)	1218
Chile	0.183***	(0.000)	0.3**	(0.012)	0.25***	(0.002)	0.047	(0.226)	1228
China	0.107***	(0.000)	-0.031	(0.627)	0.061*	(0.080)	0.17**	(0.030)	1226
Colombia	0.221	(0.000)	0.231***	(0.000)	0.219***	(0.000)	-0.131***	(0.005)	1205
Czech Republic	0.142***	(0.000)	0.06	(0.183)	0.118***	(0.000)	0.01	(0.874)	1267
Egypt	0.061**	(0.028)	0.027	(0.633)	-0.119	(0.000)	-0.174***	(0.000)	1167
Hungary	0.109***	(0.000)	0.059*	(0.090)	0.04	(0.154)	0.015	(0.763)	1267
India	0.082***	(0.000)	0.147**	(0.030)	0.257***	(0.000)	0.043	(0.556)	1187
Indonesia	0.093***	(0.000)	0.036	(0.560)	0.093**	(0.038)	-0.035	(0.544)	1235
Israel	0.141***	(0.000)	0.049	(0.470)	-0.043	(0.378)	0.162*	(0.052)	1192
Jordan	-0.027	(0.611)	0.027	(0.843)	0.224***	(0.008)	-0.404***	(0.000)	1213
Kenya	0.038	(0.375)	0.013	(0.929)	-0.086	(0.159)	-0.064	(0.495)	1230
Philippines	-0.084***	(0.001)	-0.138*	(0.058)	-0.16***	(0.000)	0.031	(0.637)	1205
Malaysia	0.166***	(0.000)	0.231**	(0.032)	0.187***	(0.002)	0.195	(0.140)	1210
Mexico	0.177***	(0.000)	0.108*	(0.016)	0.194***	(0.000)	0.003	(0.920)	1273
Morocco	-0.211***	(0.000)	-0.293***	(0.001)	-0.275***	(0.000)	0.018	(0.884)	1222
Peru	0.045**	(0.031)	0.033	(0.570)	-0.034	(0.466)	-0.057	(0.391)	1233
Poland	0.169***	(0.000)	0.083**	(0.040)	0.192***	(0.000)	0.046	(0.320)	1270
Qatar	0.052*	(0.097)	0.014	(0.869)	-0.014	(0.805)	0.056	(0.278)	1230
Romania	0.038	(0.375)	0.0128	(0.929)	-0.086	(0.159)	-0.064	(0.495)	1230
Russia	0.126***	(0.000)	0.24***	(0.000)	0.129***	(0.000)	0.06*	(0.072)	1253
South Africa	0.234***	(0.000)	0.215***	(0.000)	0.307***	(0.000)	0.029	(0.398)	1266
Thailand	0.162***	(0.000)	0.09	(0.185)	0.172***	(0.000)	0.044	(0.570)	1235
Turkey	0.148***	(0.000)	0.038	(0.414)	0.042*	(0.080)	0.071***	(0.000)	1271
UAE	0.045	(0.419)	-0.044	(0.684)	-0.054	(0.413)	-0.013	(0.033)	983
Vietnam	0.074***	(0.008)	0.062	(0.282)	-0.119	(0.005)	-0.154	(0.008)	1226

Notes: P-values are in parentheses. ***, ** and *, indicate the significance levels at 1%, 5% and 10% levels respectively.

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