Political Risk, Exchange Rate Return and Volatility

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Abstract

We examine the impact of political risk variables on the nominal exchange rate return and its volatility. We used the political risk spread between the country of interest and the USA. Overall results reveal that emerging markets are more exposed to political risk compared to developed. Further, the impact of political risk variables is more on the floating exchange rate compared to managed floating and fixed exchange rate as might be expected, since intervention in the market will generally reduce to eliminate the influence of alternative factors. We also find strong evidence that volatility increases more during a period of high political risk and poor economic conditions for only emerging markets.

Keywords: Political risk, exchange rate regime, exchange rate return and volatility.

1. Introduction

> *"In the two weeks since Election Day, markets have bought into President-elect Donald Trump's version of "America First." The dollar and U.S. stocks have soared, while currencies and shares in emerging markets – which his supporters say are siphoning off American jobs – tumbled."* Mackintosh (2016)

In practice as well as in academic research, many factors are reported as potential determinants of the exchange rate. One of the factor affecting the exchange rate in the short, medium and long term is political uncertainty. For example, Russian Ruble dropped by 2.5% against

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dollar and 1.5% to Euro after Russian invasion to Crimea. The outcome of Brexit referendum significantly caused volatility in the foreign exchange market as the pound lost 15% of its value against the Euro and 17% against the USD in the immediate wake of the referendum.[1] More recently, surprise election of Donald Trump as US president resulted in a decline of US 10 year interest rates to 1.72%, coupled with a 12.5% decline in the value of the Mexican Peso.

Studies making use of traditional models of exchange rate determination have been unable to find any important association between political risk and the nominal exchange rate (Isard (1995); Cosset and De La Rianderie (1985)). Moreover, the paucity of effective quantitative measures of political risk which often discourage researchers from following rigorous empirical study in this regard. As a consequence, it has been hard to bring together the intuitive belief that political uncertainty has an effect on exchange rates. Major progress has been made in considering how legislative politics and other political variables influence the behaviours of currency, equity, and bond markets. Political scientists have investigated the links between domestic politics and international financial markets, including currency markets. Their work provides valuable insight into how currency traders react to politics in young and emerging democracies.

The literature on political risk can broadly divided into three groups. First link the political risk as a proxy of political events such as elections to exchange rate predictability. For instance, Bachman (1992) and Blomberg and Hess (1997) concluded that elections influence the exchange rates. Whereas, Bernhard and Leblang (2002) illustrate that political events have a relationship with spot and forward exchange rates. They find forward exchange rates are a biased predictor of future exchange rates during electoral campaigns, cabinet negotiations, and cabinet dissolutions. Freeman et al. (2000) used the political variables that provided information about the likelihood of inflation, governments coming into or remaining in power. Their results confirm political impact is weaker in countries with proportional representation electoral systems than

[1]Brexit also impacted the income of sports player such as Zlatan Ibrahimovic deal with Manchester United was worth 220,000 pound. However the decision by UK to leave Europe left less money for him. Serena Williams also get effected by the Brexit as she got $380,000 less worth of prize what actually have before the start of tournament.

in countries with majority-plurality systems.

Second strand of literature on political risk is based on the argument that an increase in it would be a source of higher exchange rate volatility. Businesses and international investors are expected to utilize costly hedging instruments in an effort to manage this risk when exchange rate volatility is high. Because of it, larger exchange rate volatility can have a negative impact on international trade and financial flows among nations. Researchers mostly focus on events such as elections or amendment in the legislation as a source of political risk in a country. Political uncertainty was calculated in the past using political indicators such as elections or legislative outcomes. Lobo and Tufte (1998) found a strong political impact on the volatility for the Japanese Yen and Dutch Mark, particularly to US mid-term or presidential elections. Leblang and Bernhard (2006) employed these measures to investigate the impact of policy uncertainty on exchange rate volatility and found that political indicators manipulate exchange rate volatility.

Siokis and Kapopoulos (2007) and Cermeño et al. (2010) concluded that the political variables in the form of electoral cycle impact the volatility of exchange rate and volatility in the foreign exchange market peaked as the election period approached. Liu and Pauwels (2012) found that US and non-US political pressure does not have a significant influence on the Renminbi's returns but have significant impact on the conditional volatility. A disadvantage of above measure of political risk is that the investors are likely to be unaware of the future policies of the government. As an alternative measure of political risk, index measure would be better approach as it offer a continuous measure of political risk and also forward looking.

Third group of literature is based on the continuous time series data for political risk, for example Krol (2014) examine the relationship between the policy uncertainty and exchange rate volatility for industrial and emerging markets. Their results confirm an increase in volatility of the exchange rate of few currencies in response to both home and US policy uncertainty. Further, for the industrial economies, exchange rate volatility increased during the bad economic conditions. Another example is Filippou et al. (2015), who examined the relationship between political risk using ICRG data and currency by using the cross-section of momentum strategies.

Their results confirm that global political risk is significant for the cross-section of currency momentum.

We conclude that most of the research examined the impact of political events such as elections, change in cabinet or the opinion polls regarding the outcome of the elections on exchange rate returns and volatility. However, this study differs from others in number of ways. First, we used a quantitative measure of political risk that uses the monthly time series data for longer period. Second, we constructed three political risk components i.e., government action, conflicts and quality of governance from the political risk index as the composite political risk is too coarse to capture the political uncertainty at the country level. Third, the impact of these political risk components on exchange rate return and volatility for emerging and developed as well as on the de jure classification of exchange rate. Lastly, we also examined the relationship between political risk, volatility and exchange rate risk premium during bad economic conditions.

We found that government action, conflict and political risk significantly reduce the exchange rate returns for both emerging and developed markets. For the exchange rate volatility, the results are stronger as all the political risk components have positive and significant results. However, in all cases the impact is more on emerging markets as compared to developed markets. The analysis of political risk components on the de jure classification of exchange rate shows floating exchange rates are more exposed to political risk compared to both the managed floating and fixed exchange rate. Further, the interaction of political risk and economic conditions confirms that exchange rate volatility increases more during high political uncertainty and bad economic conditions.

The remainder of the paper is organized as follows. Section 2 describes the details about variables used in the paper. empirical method and results are discussed in Section 3, whereas robustness and extensions are considered in Section 4. Section 5 is the concludes.

2. Data

This section provides details on the construction of the exchange rate return, volatility, economic and political risk variables used in this paper.

2.1. Exchange Rate

In this study we investigate the relationship between political risk, exchange rate return and volatility of 69 countries from emerging and developed markets for the period January 1984 to December 2013. Table 6 in Appendix lists all the developed and emerging markets used for analysis. In the literature we find two main approaches to classify the exchange rate regime, de jure and de facto regimes. The de jure classification is from the IMF's annual reports on the exchange arrangements and exchange restrictions whereas de facto classification is based on Reinhart and Rogoff (2002). In this paper, the IMF classification is used for exchange rate regimes which rank countries on the basis of exchange rate flexibility and future promise to exchange rate track. We classify countries into three groups: floating, managed floating, fixed[2]. Daily and monthly data on the exchange rate were obtained from the DataStream. We converted the monthly exchange rate data for each country into returns as follows: $\Delta s_t = \log(s_t) - \log(s_{t-1})$, where s_t denotes the price of currency in US dollars in terms of other countries. The monthly volatility is calculated from the daily log returns within each month for each country.

Following Menkhoff et al. (2012), we also calculated the excess returns to a US investor for holding foreign currency as follows: $R_{t+1} = f_t - s_{t+1}$, where s and f denotes log spot and a one month forward exchange rate. The economic variable data are from the IMF's International Financial Statistics via DataStream. We used economic variables that could influence the exchange rate returns such as inflation, industrial production growth and trade openness (measured as import plus export as a ratio of GDP). We also converted the economic

[2]Here fixed exchange rate doesn't mean that rate is not moving. "Fixed rate" typically move within specific bands, for example the band for Cyprus is ±15%, for Denmark ±2.25%, for Hungary ±15% etc. For detail information please see the following web page: https://www.imf.org/external/np/mfd/er/2006/eng/0706.htm

variables relative to USA(for example for IPG, we calculated the the spread as follow: $IPGS = \log(IPG_{usa}) - \log(IPG_i)$, where IPG_{usa} is the monthly Industrial production for USA and IPG_i for country i).

2.2. Political Risk

Political risk is a qualitative measure and for analysing its contribution to financial data, we needed to quantify it. A number of Institutions such as Bank of America, Business Environment Risk Intelligence, Economist Intelligence unit, Euromoney, Institutional Investor, Standard and Poor's Rating Group, Political Risk Service Group, Coplin- O'Leary Ratings system and Moody's Investment Service offer country-by-country analysis of political risk. However few of these agencies or institutes provide quantitative analysis and most of them are on a semi-annual or annual basis. Since January 1984, the International Country Risk Guide (ICRG onwards) has been compiling economic, financial, political and composite risk ratings for over 90 countries on a monthly basis. As of December 2014, these four risk ratings were available for a total of 140 countries. This study employs political risk indices developed by the ICRG and compiled by the PRGS Group[3].

Howell and Chaddick (1994) find that ICRG indices are more reliable and are able to predict risk better than other major political risk information providers. Hoti (2005) examined the qualitative comparison of the country risk rating system used by seven leading agencies and found that ICRG is the best one to forecast the political, financial and economic risk. Bekaert et al. (2014) found that risk ratings from ICRG predict the political events well and that political risk ratings provided by ICRG can be used as an alternative to political events.

We used the data from ICRG in this study for a period of January 1984 to December 2013 depending on the availability of the financial and political data of the selected countries. ICRG provide four types of indices including political risk index (political risk onwards), economic risk index, financial risk index and composite risk index. The composite risk is the weighted

[3]The PRS Group, Inc in East Syracuse, New York has published its International Country Risk Guide which provides financial, political and economic risk ratings for 140 countries since 1984

average of all the three risks (political, economic and financial risk). Where political risk gets double the weights each of economic and financial risk. Political risk components the degree of political uncertainty in a given country and consists of twelve components. Whereas financial and economic consist of five subcomponents each. The maximum number of 100 reflect the lowest risk and score of zero is the highest risk. However for the better understanding of these ratings we subtract the actual index from 100, so that higher values of the index correspond to higher political risk.

Bekaert et al. (2014) and Bekaert et al. (2005) grouped the twelve components into four sub-indices which they named: Government Actions, Conflict, Quality of Institutions and Democratic Tendencies. Following them, we reorganize these components into three groups on the basis of their contents and also how these components are correlated. We find that group "Democratic Tendencies", which consist of two components Military in Politics and Democratic Accountability doesn't change over time for majority of the developed markets. So we merge these two components into "Quality of Institutions" and named it as "Quality of Governance"[4].

First group is named as "Government Actions" and consist of three subcomponents. First government stability assess unity, legislative strength and popularity among the journal public. Second is socioeconomic conditions which is related to action of the government towards unemployment, poverty and increase the consumer confidence. Third, is investment profile covers the risk of contract viability, changes in the taxation and repatriation.

The next group is labeled as "Conflict" consist of four subcomponents concerning the risk associated with political unrest, cross border tension, war etc. The four variables which are included in this group are internal conflicts, external conflicts, religious tensions and ethnic tensions.

[4]As we are using the monthly change in the political risk data, so to incorporate it properly in our model there should be time variation in the political risk index. Our analysis shows that there is no change in the "Democratic Tendencies" group for the following developed countries; Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Italy, Netherland, New Zealand,Norway, Sweden, Switzerland, United Kingdom and United States. For the emerging markets following countries with on average with zero change in the index; Argentina, Bahrain, Bulgaria, Estonia, Jamaica, Latvia, Oman, Saudi Arabia, Tunisia, Turkey and Ukraine. For the consistency of all countries to be accounted all the subgroups, we merge the two subgroups Quality of Institutions and Democratic Tendencies in to one group and named as Quality of Governance. Results for this can be provide on request.

The final group is "Quality of Governance" which include the components which reflect governance of institutions by elected governments in a country, such as corruption, military in politics, law and order, democratic accountability and bureaucracy quality. If the government is not properly governing the institutions then the there will be higher uncertainty related to this group.

Similarly to exchange rate data, we converted the political risk components relative to the US and named it political risk components spread as follows: $RMS = \log(RM_{usa}) - \log(RM_i)$, where RM_{usa} is the one of risk components (government action, conflict, quality of governance and political risk) for US from ICRG and RM_i is the risk measure for country i. We also converted the economic variables relative to the US.

Descriptive statistics of exchange rate, political risk components and economic variables are presented in Table 1. The emerging markets mean return is positive, whereas for the developed markets, it is negative. However, the risk associated with emerging markets' returns is higher compared to those of the developed markets. Similar results were found for the monthly volatility as higher volatility is observed for emerging markets. It can be concluded from the descriptive statistics of political risk components that developed markets have a lower political uncertainty compared to the emerging markets. The political risk is positive (0.0489) for developed markets because the majority of the countries (such as Finland, New Zealand, Sweden and Switzerland etc) are less politically risky compared to the USA.

3. Empirical Results

3.1. Political risk and exchange rate return

We used the unbalanced panel data to estimate the effects of political risk variables on the nominal exchange rate return and volatility of nominal exchange rate returns. Here, we tested that political risk should decrease the exchange rate return. The following model is used to analyse this relationship:

Table 1: Descriptive Statistics

All the data is relative to US dollars. Returns are the monthly returns of nominal exchange rates. The monthly volatility is calculated from the daily log returns within each month. For the calculation of excess returns, one month forward rates are used. Political risk variables data is from the ICRG. We constructed three political risk components spread from ICRG data which are Government Action Spread (GAS), Conflict Spread (ConS), Quality of Governance Spread (QGS) and as well composite Political Risk Spread (PRS). ERS and FRS represent the economic and financial risk spreads respectively and are also from ICRG. We converted all the political risk components relative to the US as follow: $RMS = \log(RM_{usa}) - \log(RM_i)$, where RM_{usa} is one of the risk measures for the US from ICRG and RM_i is the risk measure for country i. The economic variables are inflation spread (INFS), industrial production spread (IPGS), and OpennessS (trade openness spread) measured as import plus export as ratio of GDP. All economic variables are also relative to the USA like other risk measures.

	All		Developed		Emerging	
Variables	Mean	SD	Mean	SD	Mean	SD
Return	0.5000	5.0249	-0.0778	3.0610	0.8633	5.9071
Volatility	0.5086	0.6501	0.5689	0.2824	0.6729	0.7886
Excess Return	0.0005	0.0173	0.0001	0.0132	0.0008	0.0203
GAS	0.1817	0.2275	-0.0567	0.1947	-0.2603	0.2109
ConS	-0.0153	0.3511	0.2245	0.3090	-0.1472	0.2991
QGS	-0.3917	0.4769	0.0027	0.4975	-0.5843	0.3234
PRS	-0.1607	0.2479	0.0489	0.1947	-0.2925	0.1768
ERS	-0.0411	0.2514	0.0993	0.2036	-0.0895	0.2482
FRS	-0.2785	0.6264	-0.1258	0.4917	-0.3289	0.6572
IPGS	0.0386	0.1743	0.0161	0.1384	0.0540	0.1935
INFS	0.1981	0.7065	-0.0057	0.0857	0.3294	0.8788
OpennessS	2.1927	1.8055	1.7023	1.4265	2.6240	1.9850

$$\Delta s_{it} = a_{it} + \beta_1 RMS_{it} + \beta_2 X_{it} + \epsilon_{it} \quad (1)$$

where Δs_{it} is the monthly log returns for country i at time t and $\boldsymbol{a_{it}}$ incorporates time and country effects . RM_{it} is the political risk components spread from the ICRG. We included these political risk components government action spread, conflict spread, quality of governance spread and political risk spread (for details on how these measured are constructed, please see Section 2) one by one in our model so that we could examine the impact of political risk components individually. X_{it} is the explanatory variables inflation spread, industrial production spread, and trade openness spread (measured as import plus export as ratio of GDP) as explained in data section.

The empirical results from the equation (1) for pooled, developed and emerging markets are presented in Table 9. The coefficient estimate of government action is negative and statistically significant for all three groups. However, the impact is more significant for emerging markets. In economic terms one standard deviation increase in the government action spread leads to a decrease of 10.2% for emerging compared to 6.9% for developed markets. This could be due to the unstable government and low level of socioeconomic conditions in emerging markets.

Table 9 also presents the results from the regression using the political risk component named as conflict. The results show a significant negative coefficient for developed and emerging markets. In terms of size, one standard deviation increase in conflict spread decreases the returns only by 1.8% for developed and 24.5% for emerging markets. These results are in line with most recent conflict in Russia which has led to the decrease in the Russian ruble against the dollar and the euro by 2.5% and 1.5%. The third component constructed from the data is that the quality of governance has no significant impact on developed and emerging markets.

The coefficient for the political risk is negative and statistically significant for developed and emerging markets. The size of coefficient is quite large for emerging markets. One standard deviation increase in the political risk spread leads to a decrease of only 1.2% in the developed markets, whereas it's 9.7% for emerging markets. The economic variables inflation and indus-

trial production are positive and significant in the majority of cases. However, coefficient is negative and significant for openness.

We continued to find more interesting results after dividing our sample into floating, managed floating, and fixed exchange rate. The results for these three regimes are also presented in Table 9. The coefficient estimate of government action is negative and statistically significant only for the floating exchange rate regime. In economic terms, one standard deviation increase in the government action spread leads to a decrease of 4.3% in exchange rate returns. The second testing variable (conflict) is significantly negative for only the fixed exchange rate regime, whereas no significant results were found for floating and fixed exchange rate regimes. This is because the countries with fixed exchange rate regimes are suffering from internal as well as external conflicts. In terms of size effect, one standard deviation increase in conflict spread reduces the returns by 7.4%.

The quality of governance spread is significant and negative for both floating and managed floating exchange rates, whereas no significant results were found for the fixed exchange rate regime. The final component is the composite political risk which is the sum of three components government action, conflict, and quality of governance. The coefficient for the political risk is negative and statistically significant only for the floating exchange rate. However, no sign of significance was found for managed floating and fixed exchange rates. In terms of size effect, a one standard deviation increase in the political risk spread leads to a decrease of 5.8% in the floating exchange rate. The economic variables inflation, industrial production are positive and statistically significant for the majority of the cases.

3.2. Political risk and exchange rate volatility

At the next stage, we investigated the link between political risk and exchange rate volatility. Her our hypotheses is that as the political risk increase, the volatility of exchange rate should also increase.. To test this hypothesis, we estimate the following model:

$$\sigma_{it} = a_{it} + \beta_1 RMS_{it} + \beta_2 X_{it} + \epsilon_{it} \tag{2}$$

Table 2: Political Risk and Exchange Rate Return

Estimated coefficients from equation: $\boldsymbol{\Delta s_{it} = a_{it} + \beta_1 RMS_{it} + \beta_2 X_{it} + \epsilon_{it}}$, ($\boldsymbol{a_{it}}$ incorporates time and country effects) are reported in the table. Return ($\boldsymbol{\Delta s_{it}}$), political risk variables $\boldsymbol{RMS_{it}}$, along with other economic variables $\boldsymbol{X_{it}}$ for each country are described in Table 1. The significance denote $*$, $**$, $***$ significant level (computed using two way clustered standard errors (over time and country)) at 10%, 5%, and 1% level of significant.

	1	2	3	4	1	2	3	4
	Pooled				**Floating**			
Constant	0.6252**	0.7494***	0.7000	0.6095**	0.6933***	0.8380***	0.6449***	0.6774***
GAS	-0.1677***				-0.2012**			
CONS		-0.0171				-0.0242		
QGS			-0.2324*				-0.0729*	
PRS				-0.1909**				-0.2307**
INFS	0.1458***	0.1456***	0.6486***	0.1444***	0.1118***	0.1117***	0.1624***	0.1112***
IPGS	0.2127**	0.2320**	0.3098	0.2035**	0.2385**	0.2528**	0.2652**	0.2039**
OpennessS	-0.0329***	-0.0318***	-0.0972**	-0.0325***	-0.0257***	-0.0258***	-0.0309***	-0.0258***
N	22288	22288	22288	22288	11645	11645	11645	11645
R^2	0.2820	0.2817	0.2140	0.2820	0.4716	0.4712	0.4564	0.4816
	Developed				**Managed Floating**			
Constant	2.2898***	0.8586***	2.5438***	1.425***	0.0156	0.1799	-0.5596	-0.2228
GAS	-0.3545*				-0.1748			
CONS		-0.0588*				0.1377		
QGS			0.1425				-0.1752*	
PRS				-0.0634*				-0.3324
INFS	0.2472***	0.7181***	2.3374***	0.8742***	0.1342***	0.1390***	0.7110***	0.8553***
IPGS	0.4185*	0.2095**	0.5545**	0.1915**	0.1491	0.1644	0.4123	0.3152
OpennessS	-0.0290	-0.0091	-0.0299	-0.0102	-0.0202	-0.0225*	0.0395	-0.0403
N	8604	8604	8604	8604	8226	8226	8226	8226
R^2	0.6642	0.6515	0.6643	0.6497	0.1709	0.1710	0.1619	0.1497
	Emerging				**Managed Floating**			
Constant	0.4680	-0.2102	-0.6370	-2.4625*	-1.1812	0.0053	0.0574	-0.1205
GAS	-0.4843***				-0.6476			
CONS		-0.8204**				-0.2725**		
QGS			-0.0141				-0.2530	
PRS				-0.5503**				-0.3447
INFS	0.1091***	1.5629***	1.5909***	1.6168***	0.2623*	0.1167	0.0943	0.0714
IPGS	0.0632	-0.2772	-0.2246	-0.2317*	-0.5164	-0.2011	0.2946	0.0512
OpennessS	-0.0469***	-0.0946	-0.1005*	-0.1092**	-0.1267	-0.0765***	-0.0772***	-0.0782***
N	13684	13684	13684	13684	2415	2415	2415	2415
R^2	0.1754	0.1798	0.1795	0.1798	0.2417	0.2826	0.2822	0.281

where σ_{it} is the monthly volatility calculated from the daily returns of the exchange rate in each country, i at time t[5]. RMS_{it} is the political risk components spread as explained above. X_{it} are the explanatory variable inflation, industrial production, trade balance and money growth. In the equation above $\boldsymbol{a_{it}}$ incorporates time and country effects. .

To analyze the impact of political risk variables on the exchange rate volatility, we estimated the equation (2) for three groups i.e., full, developed, and emerging markets, and results are presented in Table 10. The coefficient estimate of government action is positive and statistically significant for all three groups. The impact is stronger for emerging markets compared to developed markets (large coefficient size for emerging markets). One standard deviation increase in the government action spread leads to an increase in the volatility of exchange rate returns by 8% and 4.5% for developed markets. Similar results were found for the conflict component as both emerging and developed markets are influenced. In terms of size, one standard deviation increase in conflict component is related to an increase of 7.1% for emerging and 3.6% for the developed markets exchange rate volatility.

The impact of quality of governance spread on the exchange rate volatility is significantly negative for the developed as well as for emerging markets. However, no significant effect was found by using the full sample data. In terms of size, one standard deviation increase in the quality of governance spread leads to 7.1% and 17.3% increase in the volatility of developed and emerging markets respectively. The coefficient for the political risk was positive and statistically significant for all the three subgroups. However, the impact is more on emerging markets. One standard deviation increase in the political risk variables leads to an increase of 8.8% in the emerging markets. The economic variables inflation is significantly positive for the full sample and emerging markets whereas it's negative for the developed markets. The sign of the coefficients is negative for both industrial production and openness.

The empirical results from the equation (2) for the three different regimes of exchange rate,

[5]In the literature, researchers calculated the volatility mainly in two ways. First, monthly volatility from daily log returns (for example Krol (2014); Schnabl (2008); Devereux and Lane (2003)). Second, used the volatility models such as GARCH class of models (for example Lobo and Tufte (1998); Leblang and Bernhard (2006); Liu and Pauwels (2012)). We use the first stream of literature to calculate exchange rate volatility.

Table 3: Political Risk and Exchange Rate Volatility

Estimated coefficients from equation: $\boldsymbol{\sigma_{it}} = \boldsymbol{a_{it}} + \boldsymbol{\beta_1 RMS_{it}} + \boldsymbol{\beta_2 X_{it}} + \boldsymbol{\epsilon_{it}}$, ($\boldsymbol{a_{it}}$ incorporates time and country effects) are reported in the table. Volatility ($\boldsymbol{\sigma_{it}}$), political risk variables $\boldsymbol{RMS_{it}}$, along with other economic variables $\boldsymbol{X_{it}}$ for each country are described in Table 1. The significance denote $*$, $**$, $***$ significant level (computed using two way clustered standard errors (over time and country)) at 10%, 5%, and 1% level of significant.

	1	2	3	4	1	2	3	4
	Pooled				**Floating**			
Constant	-0.6130***	0.4927***	0.2620***	-0.4688***	-0.9577***	0.5115***	0.5754***	-0.8213***
GAS	0.0539*				0.2939**			
CONS		0.0391				0.0072		
QGS			0.0116				0.0785***	
PRS				0.1796*				0.1417*
INFS	0.2471***	0.2593***	0.1825***	0.2363***	0.0673	0.0046	0.0026	0.0469
IPGS	-0.0065	-0.1777**	-0.1271*	0.0259	-0.3481**	-0.0751	-0.0677	-0.3037**
OpennessS	-0.0421***	-0.0155*	-0.0089	-0.0418***	-0.0128	-0.0073	-0.0082	-0.0148
N	16986	16986	16986	16986	8382	8382	8382	8382
R^2	0.3306	0.4921	0.5577	0.3308	0.6028	0.8155	0.8157	0.6028
	Developed				**Managed Floating**			
Constant	0.4490***	-0.9453***	0.4830***	0.5344***	-0.2902**	-0.5775***	-0.4606**	-0.6637 ***
GAS	0.2349**				0.0789**			
CONS		0.1165**				0.1708		
QGS			0.1427**				0.1504	
PRS				0.1254***				-0.2266
INFS	-1.7760***	-0.3151***	-1.3504***	-1.7820***	0.5320***	0.4119***	0.3998***	0.3820***
IPGS	-0.2007	-0.3578**	-0.2478*	-0.0638	-0.3845**	0.0879	0.0848	0.0886
OpennessS	-0.0691***	-0.0408***	-0.0679***	-0.0769***	-0.0048	-0.0032	0.0003	0.0007
N	6309	6309	6309	6309	6943	6943	6943	6943
R^2	0.6328	0.6791	0.6327	0.6356	0.3122	0.2016	0.3135	0.2014
	Emerging				**Managed Floating**			
Constant	-1.0802***	-0.9652***	-0.7620***	-1.1886***	0.1394	0.2842**	0.2047**	0.0148
GAS	0.3805**				0.4232			
CONS		0.2336**				0.2495**		
QGS			0.5367***				0.0212	
PRS				0.4993**				-0.2097
INFS	0.3603***	0.3698***	0.2732***	0.3623***	-0.0867	-0.1981	0.1565	0.2235**
IPGS	-0.0413	-0.0054	0.1645	-0.0038	-0.3299	-0.7793**	-0.2362*	-0.6823***
OpennessS	-0.0524***	-0.0497***	-0.0374***	-0.0520***	-0.1417***	-0.1033***	-0.0058	-0.0390***
N	10677	10677	10677	10677	1660	1660	1660	1660
R^2	0.1429	0.1423	0.2415	0.1428	0.3085	0.4100	0.6124	0.6125

floating, managed floating and fixed are presented in Table 10. We first considered the influence of the government action component on the volatility of exchange rate regimes. The coefficient of government action is statistically significant for floating and managed exchange rate regimes. In economic terms, one standard deviation increase in the spread leads to an increase in the exchange rate volatility by 6.2% for floating and only by 1.8% for managed float.

In the second regression, we examined the relationship between the exchange rate volatility and the conflict component. Results were positive and statistically significant for only the fixed exchange rate. In economic terms, an increase of one standard deviation in the conflict spread is associated with an increase in the volatility of exchange rate by 6.36%. The variable quality of governance component is significantly positive for the floating exchange rate volatility. The size of the effect is small as one standard deviation increase in quality of governance spread is associated with 3.5% points increase in the volatility of floating exchange rate.

Lastly, we analyzed the composite political risk spread which is the sum of all the three risk components, i.e., government action, conflict and quality of governance. The coefficient for the political risk is positive and statistically significant only for floating exchange rate volatility. No sign of significance was found for managed floating and fixed exchange rate volatility. In terms of size effect, a one standard deviation increase in the political risk spread leads to an increase of 3.5% in exchange rate volatility. The economic variables inflation is positive and significant for only managed float, whereas industrial production and openness were negative for all the three exchange rate regimes.

4. Extensions and Robustness

4.1. Political risk, exchange rate volatility and economic conditions

Pástor and Veronesi (2013) found that during the time of high political uncertainty and weak economic conditions, volatility increases more (they showed that for the US stock market). We empirically examined their model on the currency market with a large set set of countries from

developed and emerging markets. First, we examined a relationship between political risk and exchange rate volatility (see Section 3.2). Now, we examined the hypothesis "does exchange rate volatility increases more when political risk is high and economic conditions are worse"? The following model used with the interaction term for the economic conditions:

$$\sigma_{it} = a_{it} + \gamma_1 RMS_{it} + \gamma_2 RMS_{it} IPGS_{it} + \gamma_3 X_{it} + \epsilon_{it} \tag{3}$$

Equation (3) is similar to equation (2), the only difference is the interaction term of risk measure and the economic conditions. We used the industrial production growth spread (IPGS) as a measure of economic conditions. As the higher value of IPGS suggests good economic conditions, we expect a negative sign for interaction term ($\gamma_2 < 0$).

Table 4 presents the results of the political risk components for the full sample, developed and emerging markets from the equation (3). Here, we are more interested in the interaction term. According to hypothesis, volatility will be higher during higher political risk and bad economic periods. Our results are much stronger for the emerging markets as the coefficient of interaction term is negative and significant for all the four risk spreads. So we confirm that political risk becomes more important during poor economic conditions. The link is weak for developed markets as only quality of governance and political risk is with significant negative coefficients, whereas for the government action and conflict variable it is negative but not significant. These results are consistent with finding of Pástor and Veronesi (2013) for US equity market, Suleman and Daglish (2015) for developed and emerging equity markets, and Krol (2014) for currency market.

4.2. Political risk, economic conditions and risk premia

We also examined the relationship between the exchange rate risk premia during weak economic conditions when political risk is high. The one month forward rate was used to calculate excess returns, and the list of countries used for empirical analysis is exhibited in Appendix, Table 7.

Table 4: Political Risk, Exchange Rate Volatility and Economic Conditions
Estimated coefficients from $\boldsymbol{\sigma_{it}} = \boldsymbol{a_{it}} + \boldsymbol{\gamma_1 RMS_{it}} + \boldsymbol{\gamma_2 RMS_{it} IPGS_{it}} + \boldsymbol{\gamma_3 X_{it}} + \boldsymbol{\epsilon_{it}}$, ($\boldsymbol{a_{it}}$ incorporates time and country effects) are reported in the table. Volatility ($\boldsymbol{\sigma_{it}}$), political risk variables $\boldsymbol{RMS_{it}}$, along with other economic variables $\boldsymbol{X_{it}}$ for each country are described in Table 1. The significance denote $*$, $**$, $***$ significant level (computed using two way clustered standard errors (over time and country)) at 10%, 5%, and 1% level of significant.

	1	2	3	4	1	2	3	4
	Pooled							
Constant	-0.0187	-0.5744***	0.0565	-0.4660***				
GAS	0.1704**							
GAS*IPG	-0.5044*							
CON		0.0134						
CON*IPG		-0.1032						
QGS			0.0709					
QGS*IPG			-0.0525					
PRS				0.1813*				
PRS*IPG				-0.0770*				
N	16987	16987	16987	16987				
R^2	0.2599	0.3306	0.2596	0.3308				
	Developed				**Emerging**			
Constant	0.4075***	-0.9321***	0.8582***	-0.9441***	-0.1974***	-0.0718	-0.1974***	-0.5087***
GAS	0.2268**				0.5709***			
GAS*IPG	-0.7876				-0.5193**			
CON		0.1157**				0.0128		
CON*IPG		-0.1976				-0.4423**		
QGS			0.0692***				0.5709***	
QGS*IPG			-0.1927**				-0.5193***	
PRS				0.3814***				0.5101***
PRS*IPG				-0.4026**				-0.1668**
N	6309	6309	6309	6309	10678	10678	10678	10678
R^2	0.6329	0.6792	0.7292	0.6805	0.3807	0.3788	0.3807	0.3903

The following model was used for empirical analysis:

$$R_{it+1} = a_{it} + \gamma_1 RMS_{it} + \gamma_2 RMS_{it} IPGS_{it} + \gamma_3 X_{it} + \epsilon_{it} \tag{4}$$

where, R_{it+1} is the risk premium (excess currency returns) calculated using spot and one month forward exchange rates (see Section 2.1), and the coefficient of interest is the interaction term of political risk and economic conditions. We expect a negative coefficient for γ_2, because the investors will demand a higher return during the high political risk periods.

The results from equation (4), are presented in Table 5, are not strong either for developed or emerging markets. We investigated investors' demand for a higher risk premium during higher political risk and poor economic conditions. We found no clear evidence in favour of the link between political risk and risk premium as most of the coefficients for interaction were negative; however, it is only significant ($\gamma_2 < 0$) for political risk. The risk measure conflict has a significant negative coefficient for emerging markets.

4.3. Economic data from ICRG

We also used the data for economic and financial risk from ICRG for the robustness of our results. Our sample increased from 69 countries to 104 countries and a list of countries is presented in Table 8 in Appendix. The results for the equation (1) are presented in Table **??** for developed and emerging markets along with floating, managed floating and fixed exchange rate. For the emerging markets we found the similar results, i.e., emerging markets are more affected by political risk measures compared to with developed markets. For emerging markets, all the four components are negative and significant, whereas for developed markets only one risk component (government action spread) had significant results. On the basis of these results, conclude that the impact of political risk is more on emerging markets. Moving toward the exchange rate regime, the managed floating regime is more influenced by political risk as three components are significant compared to two for the floating exchange rate. No significant results were found for the fixed exchange rate.

Table 5: Political Risk, Economic Conditions and Risk Premia
Estimated coefficients from $\boldsymbol{R_{it+1} = a_{it} + \gamma_1 RMS_{it} + \gamma_2 RMS_{it} IPGS_{it} + \gamma_3 X_{it} + \epsilon_{it}}$, ($\boldsymbol{a_{it}}$ incorporates time and country effects) are reported in the table. Risk premium ($\boldsymbol{\sigma_{it}}$), political risk variables $\boldsymbol{RMS_{it}}$, along with other economic variables $\boldsymbol{X_{it}}$ for each country are described in Table 1. The significance denote $*$, $**$, $***$ significant level (computed using two way clustered standard errors (over time and country)) at 10%, 5%, and 1% level of significant.

	1	2	3	4	1	2	3	4
	Pooled							
Constant	-0.7992***	-0.0078**	-0.9677***	-0.0024				
GAS	0.0641							
GAS*IPG	-0.8084*							
CON		0.0003						
CON*IPG		0.0101						
QGS			0.0624					
QGS*IPG			-0.1929					
PRS				0.0046				
PRS*IPG				-0.0226*				
N	9287	9287	9287	9287				
R^2	0.4524	0.4287	0.4385	0.3098				
	Developed				**Emerging**			
Constant	-1.2693***	-0.0197***	-0.0194***	-0.0194***	0.1968	0.2138	0.0540	0.0109**
GAS	0.1207				0.0287			
GAS*IPG	-0.6114				-0.2091			
CON		0.0003				0.4352		
CON*IPG		-0.0079				-0.8243		
QGS			0.0010				-0.0530	
QGS*IPG			-0.0084				-0.4418	
PRS				0.0010				0.0049
PRS*IPG				-0.0178*				-0.0278*
N	4389	4389	4389	4389	4897	4897	4897	4897
R^2	0.5620	0.5316	0.5312	0.5312	0.4048	0.4319	0.4306	0.2956

The results for volatility of exchange rate using equation (2) with economic and financial risk from ICRG are presented in Table **??** for emerging and developed markets and also the three different exchange rate regimes. The results confirm that political risk spread is important for both emerging and developed markets. However, the size of coefficients is larger for emerging markets. The fixed and managed floating results are similar when we use the real economic variables. However, for the floating exchange rate we found only one significant coefficient which is different when real economic variables are used (inflation, industrial production and trade openness).

5. Conclusion

This paper examined the relationship between political risk components and exchange rate returns and volatility. The political risk components for this study are constructed from the rating provided by the ICRG. First we analyzed the impact of political risk components such as government action spread, conflict spread, quality of governance spread and political risk spread on the emerging and developed markets. Our results reveal that emerging markets are more exposed to political risk. Further impact of political risk variables is more on the floating exchange rate compared to the managed floating and fixed exchange rate returns. This make sense as markets are more supposed to convey signals, and when exchange rate is not determined by market forces (e.g., fixed exchange rate), there is no avenue for political risk to lead to exchange rate variation.

Turning towards the volatility dynamics, we found that both emerging and developed markets' volatility is influenced by all four political risk components. However, the size of impact is more on emerging markets. Further floating exchange rate volatility responds more to political risk components compared to the other two regimes. Our results are robust when analyzed by using economic and financial data from ICRG. Further, we also found a strong evidence that volatility increases more during a period of high political uncertainty and poor economic conditions for emerging markets. The results for exchange rate risk perima are mostly insignif-

icant for the majority of the components. However, only political risk spread with significant coefficients for both emerging and developed markets.

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Appendix A. List of countries

This section presents the list of the countries used for analysis (both main and robustness check). The results related to robustness estimates are also presented in this appendix. Table 6 to 8 presents the list of countries used for analysis. Whereas **??** to **??** shows the results of robustness check.

Table 6: List of Countries

List of countries with economic variables used in main analysis of section 5.5.1 and 5.5.2.

Developed		**Emerging**			
Australia	Italy	Albania	Czech Republic	Latvia	Slovakia
Austria	Japan	Argentina	Ecuador	Lithuania	South Africa
Belgium	Luxembourg	Bangladesh	Egypt	Malaysia	South Korea
Canada	Netherlands	Bolivia	El Salvador	Malta	Sri Lanka
Denmark	New Zealand	Brazil	Estonia	Mexico	Taiwan
Finland	Norway	Bulgaria	Ghana	Pakistan	Thailand
France	Portugal	Chile	Hungary	Peru	Tunisia
Germany	Singapore	China	India	Philippines	Turkey
Greece	Spain	Colombia	Indonesia	Poland	Ukraine
Hong Kong	Sweden	Costa Rica	Israel	Romania	
Iceland	Switzerland	Croatia	Kazakhstan	Russia	
Ireland	United Kingdom	Cyprus	Kenya	Serbia	

Table 7: List of Countries

List of countries used to calculate excess returns using the one month forward rate.

Developed		**Emerging**		
Australia	Italy	Argentina	India	Romania
Austria	Japan	Bulgaria	Indonesia	Russia
Belgium	Netherlands	Chile	Israel	Serbia
Canada	New Zealand	China	Kazakhstan	Slovakia
Denmark	Norway	Colombia	Kenya	South Africa
Finland	Portugal	Croatia	Latvia	South Korea
France	Singapore	Cyprus	Lithuania	Sri Lanka
Germany	Spain	Czech Republic	Malta	Taiwan
Greece	Sweden	Egypt	Mexico	Thailand
Hong Kong	Switzerland	Estonia	Pakistan	Tunisia
Iceland	United Kingdom	Ghana	Philippines	Turkey
Ireland		Hungary	Poland	Ukraine

Table 8: List of Countries

List of countries for which economic and financial rating used from ICRG for robustness check.

Developed		**Emerging**			
Australia	Spain	Albania	Egypt	Lithuania	Slovakia
Austria	Sweden	Algeria	El Salvador	Malawi	South Africa
Canada	Switzerland	Argentina	Estonia	Malaysia	South Korea
Denmark	United Kingdom	Bahrain	Ethiopia	Malta	Sri Lanka
Finland		Bangladesh	Gambia	Mexico	Sudan
France		Belarus	Ghana	Morocco	Suriname
France		Bolivia	Guatemala	Namibia	Syria
Germany		Botswana	Guinea	Nicaragua	Taiwan
Greece		Brazil	Honduras	Nigeria	Tanzania
Hong Kong		Brunei	Hungary	Oman	Thailand
Iceland		Bulgaria	India	Pakistan	Trinidad & Tobago
Ireland		Chile	Indonesia	Paraguay	Tunisia
Italy		China	Israel	Peru	Turkey
Japan		Colombia	Jamaica	Philippines	United Arab Emirates
Luxembourg		Costa Rica	Jordan	Poland	Uganda
Netherlands		Croatia	Kazakhstan	Qatar	Ukraine
New Zealand		Cyprus	Kenya	Romania	Uruguay
Norway		Czech Republic	Kuwait	Russia	Venezuela
Portugal		Dominica Republic	Latvia	Saudi Arabia	Vietnam
Singapore		Ecuador	Liberia	Serbia	Zambia

Table 9: Political Risk and Exchange Rate Return

Estimated coefficients from equation: $\boldsymbol{\Delta s_{it}} = \boldsymbol{a_{it}} + \boldsymbol{\beta_1 RMS_{it}} + \boldsymbol{\beta_2 X_{it}} + \boldsymbol{\epsilon_{it}}$, ($\boldsymbol{a_{it}}$ incorporates time and country effects) are reported in the table. Return ($\boldsymbol{\Delta s_{it}}$), political risk variables $\boldsymbol{RMS_{it}}$, along with other economic variables $\boldsymbol{X_{it}}$ for each country are described in Table 1. ERS and FRS represent the economic and financial risk spreads respectively and are also from ICRG. The significance denote $*$, $**$, $***$ significant level (computed using two way clustered standard errors (over time and country)) at 10%, 5%, and 1% level of significant.

	1	2	3	4	1	2	3	4
	Pooled				**Floating**			
Constant	0.1387	1.1162**	1.1209**	0.0768	0.3787*	0.5002**	0.4891**	0.4349*
GAS	-0.1895***				-0.1769**			
CONS		0.0155				0.0527		
QGS			0.0294				-0.0254	
PRS				-0.2895***				-0.1122*
ERS	0.0373	-0.1179***	-0.1171***	0.0309	-0.1964***	-0.2305***	-0.2252***	-0.2114***
FRS	-0.209***	-0.206***	-0.2041***	-0.1872***	-0.2999***	-0.3164***	-0.2995***	-0.2888***
N	33694	33694	33694	33694	2425	12425	12425	12425
R^2	0.16221	0.1737	0.1637	0.1623	0.4217	0.4215	0.4214	0.4215
	Developed				**Managed Floating**			
Constant	0.7989***	0.8317***	0.3510**	0.81651**	-0.4672**	-0.2436	-0.0803	-0.7924***
GAS	-0.1101*				-0.5417***			
CONS		0.0263				-0.2407***		
QGS			-0.0327				-0.1058	
PRS				-0.0842				-0.8042***
ERS	-0.0344	-0.0591	-0.0576	-0.0434	0.4007***	0.3281***	0.3424***	0.3717***
FRS	-0.0401	-0.0568	-0.0482	-0.0446	-0.2355***	-0.2215***	-0.2335***	-0.2029***
N	8628	8628	8628	8628	2949	12949	12949	12949
R^2	0.6311	0.6309	0.6283	0.6475	0.0959	0.0951	0.0941	0.0962
	Emerging				**Managed Floating**			
Constant	-0.0244	0.0789	0.8422	0.0779	2.1932	0.3318	2.0825	0.2094
GAS	-0.3113***				0.15841			
CONS		-0.7777***				-0.1034		
QGS			-0.6884***				-0.12997	
PRS				-0.3334***				-0.2427
ERS	0.0463	-0.2991***	-0.1826***	0.0272	-0.148**	-0.1228**	-0.1062*	-0.0989*
FRS	-0.077*	-0.2856	-0.0468	-0.0831*	-0.0969	-0.1012	-0.0955	-0.0917
N	25066	25066	25066	25066	8316	8316	8316	8316
R^2	0.0885	0.1078	0.1076	0.1087	0.1181	0.1176	0.1179	0.1177

Table 10: Political Risk and Exchange Rate Volatility

Estimated coefficients from equation: $\boldsymbol{\sigma_{it}} = \boldsymbol{a_{it}} + \boldsymbol{\beta_1 RMS_{it}} + \boldsymbol{\beta_2 X_{it}} + \boldsymbol{\epsilon_{it}}$, ($\boldsymbol{a_{it}}$ incorporates time and country effects) are reported in the table. Volatility ($\boldsymbol{\sigma_{it}}$), political risk variables $\boldsymbol{RMS_{it}}$, along with other economic variables $\boldsymbol{X_{it}}$ for each country are described in Table 1. ERS and FRS represent the economic and financial risk spreads respectively and are also from ICRG. The significance denote $*$, $**$, $***$ significant level (computed using two way clustered standard errors (over time and country)) at 10%, 5%, and 1% level of significant.

	1	2	3	4	1	2	3	4
	Pooled				**Floating**			
Constant	0.0716	0.3423***	-0.2807***	0.1582***	0.2243**	0.1915***	0.57335***	0.3316***
GAS	0.0627				.0203			
CONS		0.0691**				0.0009		
QGS			0.1725***				0.0361	
PRS				0.2276**				0.2163**
ERS	0.2106***	0.2147***	0.3039***	0.2254***	0.0182	0.0917	0.0509**	0.0448
FRS	0.4248***	0.3234***	0.5264***	0.4264***	0.1269**	0.1002*	0.00520	0.1270**
N	25192	25192	25192	25192	8830	8830	8830	8830
R^2	0.2254	0.3879	0.1731	0.2256	0.5814	0.5015	0.8112	0.5817
	Developed				**Managed Floating**			
Constant	-0.3992***	0.8919***	0.5394***	-0.8045***	-1.6915***	-0.2415*	-0.5349**	-1.5704***
GAS	0.1666*				0.3186			
CONS		0.1090*				0.2423*		
QGS			0.2083***				0.0642**	
PRS				0.4164***				0.1914
ERS	0.0391	0.0722	0.0658	0.0178	0.4967***	0.4045***	0.5229***	0.6677***
FRS	0.1102	0.1181	0.1181	0.1194	0.6648***	0.3605***	0.4831	0.8303
N	6309	6309	6309	6309	9808	9808	9808	9808
R^2	0.6294	0.6783	0.6303	0.6792	0.1723	0.3551	0.3051	0.1089
	Emerging				**Managed Floating**			
Constant	-1.7182***	-1.7091***	-2.0786***	-1.7246***	-0.2066**	-0.1803**	-0.3933**	-0.1389
GAS	0.0268				0.2011			
CONS		0.2676***				0.9833***		
QGS			0.7107***				-0.1303	
PRS				0.7167**				.3321
ERS	0.3019***	0.2994***	0.2748***	0.2985***	0.0185	0.03340	0.0486	0.0179
FRS	0.5491**	0.557***	0.5045***	0.5489***	0.1907***	0.1789***	-0.2036	0.1866***
N	18883	18883	18883	18883	6553	6553	6553	6553
R^2	0.1613	0.1615	0.1626	0.1613	0.3022	0.3031	0.3018	0.3022