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THE IMPACT OF US ELECTIONS ON THE DOLLAR'S EXCHANGE RATE

ABSTRACT: *This paper explores the effect of U.S. domestic politics on the behaviour of international currency markets. Specifically, for the first time in the literature, we gauge the impact of a divided government on the exchange rate volatility of five currencies: the Japanese yen, the Canadian dollar, the British pound, the Mexican peso, and the euro. At the same time, we control for the impact of political and macroeconomic factors. A GARCH methodology has been adopted for this objective, using weekly data from 2000 to 2021. The evidence suggests that the partisan and divided government variables significantly impact the conditional variance equation, whilst the observed reduced levels of exchange rate volatility during a Democrat presidency run counter to prior studies on partisanship. In addition, exchange rate volatility seems to increase one month before an election and during periods of divided government. Given the nascent evidence, we argue that U.S. politics are instrumental in affecting global financial markets.*

KEY WORDS: *International economics, exchange rates, political economy, GARCH modelling.*

JEL CLASSIFICATION: F31, G15, P16, C22.

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1. INTRODUCTION

Since the 1970s and the collapse of the Bretton Woods system, exchange rate volatility has been at the centre stage of academic research. Generally, most of the extant academic literature on the causes of exchange rate volatility focuses on financial and macroeconomic factors (see Brogaard et al., 2020; Vogiazas et al., 2019). However, Lobo and Tufte (1998), from a political economy perspective, were amongst the first to explore the channels through which politics can affect exchange rate volatility. The incorporation of electoral and partisan variables into the financial literature was also observed in studies by Alesina (1988), Alesina and Sachs (1988), and Alesina and Roubini (1992).

Ohmae (1995) argued that nations lose their ability to control and protect their exchange rates and therefore forfeit their roles as critical participants in the global economy. This narrative, which prevailed in the 1990s, reflects the economic and political landscape studied by most of the prior literature, such as Bachman (1992), Lobo and Tufte (1998), and Blomberg and Hess (1997).

Over the last decades, the global economic landscape has changed dramatically due to the growing complexity of international trade, multinationals' role, and the increased economic interdependence between countries. More recently, we have also observed the polarisation of U.S. politics, the rise of populism, and the growing resentment towards globalisation.

Intriguingly, the research in this area mainly focuses on electoral variables, but the results are conflicting or inconclusive. Therefore, we argue that partisan factors would be important given the ever-changing nature of partisan politics. The ideological composition of the Republican and Democrat parties in the U.S. is quite distinct from that of 30 years ago, as defined by the present societal and economic conditions. As most research on partisan effects took place more than 30 years ago, we feel that there is vital scope for a study looking at a more nuanced perspective of domestic politics and the role of international politics on exchange rate volatility. Given the unravelling importance of globalisation, such an approach will provide further insight into the fundamental aspects of politics.

Unlike previous studies, our research is motivated by the scant evidence on the impact of a divided government, which, in conjunction with election and partisan

variables, gauges the relevance of the key theoretical perspectives in the area that these represent i.e., divided government theory (Lohmann & O'Halloran, 1994), partisan business cycle theory, (Nordhaus, 1975; Lobo & Tufte, 1998), and partisan theory (Hibbs, 1994). Nordhaus (1975) explains that governments are driven by opportunistic behaviour[1], while Hibbs (1994) by the rational behaviour of politicians; both explanations are part of the political macroeconomy, yet focus on different driving forces.

Apart from treating the U.S. federal elections as a source of domestic political uncertainty, this study also uses U.S. politics as a proxy for global risk (Brogaard et al., 2020). We qualify the latter by arguing that a) the U.S. elections matter to other countries given their hegemonic position as the world's largest economy and their dominance in global trade; b) the U.S. elections are the most covered globally, and c) partisan politics in the U.S. implies that the outcome generates material uncertainty over policy stemming from unpredictable election outcomes.

Therefore, we propose to revisit the impact of political events and augment its scope by focusing on international politics to understand exchange rate volatility. To this end, by applying a GARCH (1,1) methodology on weekly data spanning the period 2000 to 2021, we explore the impact of U.S. domestic politics on exchange rate volatility of the spot rate of five currencies, i.e. the Japanese yen, the Canadian dollar, the British pound, Mexican peso, and the euro, with the U.S. dollar. We also incorporate three political variable categories based on theories derived from political/international political economy and six macroeconomic control variables. The evidence suggests that the partisan and divided government variables significantly impact the conditional variance equation, whilst the observed reduced levels of exchange rate volatility during a Democrat presidency run counter to prior studies of partisanship (see Lobo & Tufte, 1998). Finally, exchange rate volatility increases one month before an election.

[1] In Nordhaus's (1975) model, governments care about reelection prospects. Therefore, they exploit the Phillips curve, i.e., the trade off between unemployment and inflation, as politicians have little reason to value post-election consumption.

The structure of this paper is as follows: section 2 reviews the literature, whilst section 3 discusses the data and the methodology utilised. Section 4 reports and discusses the empirical results, and section 5 provides some concluding remarks.

2. THEORETICAL PERSPECTIVES

The outcome of U.S. elections can have significant implications for economic policies, international relations, and financial markets. Elections can be viewed as a source of uncertainty or a proxy for risk as the outcome can have a material impact on the global economy given the size and influence of the U.S. economy. One argument favouring this view is that different political parties have different policy preferences, and their control of government institutions can lead to significant changes in the regulatory framework, tax, and spending priorities. For example, the election of Donald Trump in 2016 led to a substantial shift in U.S. trade policy with the imposition of tariffs on imports. Then, the election of Joe Biden in 2020 led to expectations of a more expansionary fiscal policy and higher taxes for corporations and wealthy individuals. Both election results affected global supply chains, prices, and growth expectations.

Several studies argue that U.S. elections affect financial markets and the global economy. For instance, the International Monetary Fund (IMF) regularly assesses the impact of political events, including U.S. elections, on the global economy in its World Economic Outlook (WEO) reports. The World Bank also acknowledges the impact of political events, including U.S. federal elections, on the global economy in its Global Economic Prospects reports.

Similarly, BIS (2020) examines the effect of geopolitical risks on exchange rate volatility in emerging market economies. The authors use a panel data set of 36 emerging market economies in the period 1996–2019 and find that geopolitical risks significantly affect exchange rate volatility.

Generally speaking, scholars have been reluctant to engage vigorously with empirical research exploring political factors' impact on exchange rate volatility. In the extant academic literature, three theoretical strands treat politics as a factor potentially explaining exchange rate volatility. The most impactful, oldest, and widely researched one looks at political events as a source of volatility given the uncertainty concerning future policy (see Bachman, 1992; Lobo & Tufte, 1998).

The second strand engages with political indices as proxies for political risk but often ignores exchange rate volatility (see Melvin & Tan, 1996; dos Santos et al., 2021; Vortelinos & Saha, 2016), whilst the third one looks at the role of socio-political and political instability factors, such as civil unrest, and their impact on exchange rates (see Kutan & Zhou, 1995; Melvin & Tan, 1996; Bouraoui & Hammami, 2017).

2.1 Elections, partisanship, and exchange rates

The most influential and widely researched area of politics and exchange rates looks at political risk by using political events as a proxy, such as elections, partisanship, and approval rating variables. Generally, the literature finds consistent evidence suggesting that elections impact exchange rate volatility (see Lobo & Tufte, 1998; Bachman, 1992; Blomberg & Hess, 1997).

Bachman (1992) by using political news (specifically, elections) as a determinant of bias in the forward market, established that half of the elections were significant for determining forward bias, whilst no discernible pattern as to the influence on exchange rate volatility was detected. Furthermore, Blomberg and Hess (1997), in investigating whether politics influences exchange rates and whether incorporating political variables will improve the accuracy of exchange rate forecasting, found that a) exchange rates are sensitive to political variables regardless of incorporating economic variables; b) there is no evidence to suggest that exchange rates and political variable work in the opposite direction – i.e., exchange rates influence a president's approval ratings; and c) the political variables for partisanship, elections, and approval rating are statistically significant, but, unexpectedly, approval ratings have a negative coefficient, suggesting that a popular president leads to currency depreciation. While this evidence shows that political variables are relevant to determining exchange rates, it does not suggest that this affects exchange rate volatility.

On the impact of political events on exchange rate volatility, Lobo and Tufte (1998) found an effect on conditional variance or volatility for four USD currency pairs (Japanese yen, German mark, British pound, and Canadian dollar) during election years. Although the authors could not discern a clear pattern of either an increase or a decrease in volatility across all pairs, they observed an increase in volatility during a Democrat rather than a Republican government.

Assuming that a) volatility is a consequence of uncertainty relating to government policy mix and b) investors are sensitive to changes in the political regime, then one can infer that in the context of U.S. elections, exchange rate volatility can be linked to the political economy literature via two channels supported by the political business cycle theory (see Nordhaus, 1975) and the partisan theory (see Hibbs, 1994). Nordhaus (1975) explains it in terms of opportunistic behaviour while Hibbs (1994) explains it in terms of rational behaviour of politicians.

According to the political business cycle theory (PBC)[2], politicians are opportunistic and seek to maximise the probability of getting re-elected, which is contingent upon the economy's performance; therefore, governments adopt different policies before elections as opposed to during non-election periods. The partisan theory predicts that politicians will differ in policy outcomes along partisan lines. In turn, the outcome of policy associated with this will be determined by the party's ideological position. These policy decisions are constrained by the economic structure, which is normally represented by the trade-off between inflation and unemployment (the dynamic Philips curve) (Lobo & Tufte, 1998). In this context, Blomberg and Hess (1997) suggest a distinct difference between a left-wing and a right-wing government, as left-wing governments have a higher tolerance of inflation. This is confirmed by Siokis and Kapopoulos (2003), who also found that a left-wing (socialist) party versus an incumbent right-wing party had a significant impact on the conditional variability of the currency (i.e., the Greek drachma at that time).

Additional work by Leblang and Bernhard (2006) found that the conditional variance of the exchange rate depends on the position within the election cycle. Specifically, for both Belgium and Sweden, there was an increase in volatility during the dissolution period, but the post-election period generally saw a decrease in volatility. The authors also argued that the nature of the political system needs to be considered when designing a model to explore political variables.

[2] It should be noted that PBC leads to a great extent to the explanation of political (electoral) cycles that leads on to political and economic instability and then possibly to exchange rate volatility as a consequence either of opportunistic policy or partisan policy.

Further evidence suggests that countries with majoritarian systems experience lower levels of volatility than pluralist systems at various stages in the electoral cycle. For instance, France and Britain (majoritarian systems) saw no consistent volatility during the dissolution of governments, whilst Sweden and Belgium (pluralist systems) saw increases during negotiations and dissolution periods. This is due to the higher uncertainty of a strong government being formed under a pluralist system, as coalitions are more likely, leaving room for policy uncertainty.

In the U.S., however, electoral periods are exogenous as they are set out in the constitution and are therefore not necessarily subject to the same constraints, such as the predictability of the parliamentary system. In contrast, the U.K. elections are found to often be accompanied by periods of lower volatility due to the predictability of the British parliamentary system (Leblang & Bernhard, 2006). Furthermore, Garfinkel et al. (1999) established that surprising or unforeseen election outcomes significantly raised uncertainty for investors, whilst anticipated or ambiguous election results were insignificant. Freeman (2000) provides evidence that links democratic systems to electoral outcomes and finds significance in determining exchange rate volatility due to increased uncertainty over policy outcomes. In the same spirit, the results of Siokis and Kapopoulos (2003) reinforce the view established in prior research on the importance of partisanship and elections in affecting currency fluctuations.

Leblang and Bernhard (2006), whilst not directly researching the role of hegemonic politics, do include foreign politics as a variable. More specifically, their study on the role of German elections in exchange rate volatility for four European currency pairs found inconsistent evidence to suggest that German elections influence foreign currency pairs. The German polls did not have any significant impact on the British pound. For the Belgian and French franc, however, the campaign period proved to be significant, exhibiting a negative coefficient, i.e., signalling lower volatility during elections, whereas the German period of negotiation had a positive and significant impact on the volatility of Swedish krona.

Liu and Pauwels (2012) approach the study of international politics and exchange rates by examining whether international political pressure influences the

Chinese exchange rate (CNY/USD) through an events study methodology. They divide political pressure into U.S. political pressure and non-US aggregated pressure[3]. Their findings suggest that the aggregate external pressure and U.S. pressure indicators positively affect exchange rate volatility. Another significant factor is the negative coefficient of the Sino-US meetings indicator, suggesting that volatility declines during diplomatic talks between the two countries. The distinction between these coefficients is that the market reacts to uncertainty surrounding policy between two nations and prefers dialogue. Furthermore, Brogaard et al. (2020) investigated the role of global political uncertainty across asset classes, primarily domestic stock markets but also sovereign bonds and foreign exchange.

Following the rationale of the prior literature, this study treats U.S. federal elections as a source of domestic political uncertainty and as a proxy for global risk. Overall, evidence suggests that U.S. elections generally lead to an appreciation of the U.S. dollar against foreign currencies, whilst insights into exchange rate behaviour are limited (Menkhoff et al., 2012, 2017).

2.2 Political risk indices

The next strand of the literature investigates political risk proxied by compound indices. Using political risk indices to analyse foreign exchange has become popular in recent years. This is potentially due to the extensive focus of earlier research on connecting political event variables with currency volatility owing to the difficulties associated with using political risk indices. Fundamentally, most of these variables are very subjective, making it challenging to consistently and accurately apply numerical values to issues such as judicial independence. This can be seen as a reason for studying events; subjectiveness is not necessarily a major concern with event studies due to the binary nature of using events such as elections.

Despite these challenges, however, indices have been developed and effectively used in the respective literature. Melvin and Tan (1996), dos Santos et al. (2021),

[3] The definition of political pressure given by Liu and Pauwels (2012) stems from public statements from officials on Chinese Exchange Rate Policy from the US, EU, Japan, and major international organisations, such as the International Monetary Fund, the G7 Group, and the Asian Development Bank.

Vortelinos and Saha (2016) and Bekaert et al. (2014), using the International Country Risk Guide index (ICRG) and the Economic Policy Uncertainty index (EPU), concluded that political risk is significant and positively correlated with exchange rate volatility and returns. More specifically, Melvin and Tan (1996), using the ICRG index in a cross-sectional setting, found a connection between higher political risk and a higher spread for the South African rand, which reflects higher market uncertainty and volatility. Similarly, Vortelinos and Saha (2016) found that political risk had a significant impact on the volatility of exchange rate markets, particularly in North America, the most affected.

Furthermore, Filippou et al. (2017) and Brogaard et al. (2020), when exploring how political shocks influence currency investment strategies and their profitability, found that unexpected global political risk is priced into the cross-section of currency momentum strategies and explains a lot of the excess returns. Notably, the authors conclude that speculators will demand a premium on currencies with significant exposure to global political risk but specifically U.S. political shocks, especially in the short term. This generally highlights that there is a foundation in the literature for U.S. risk or variables being used as a proxy for global risk.

In a nutshell, the extant literature has provided sound evidence demonstrating that compounded political indices can be used to study political risk as an alternative to event studies of politics and exchange rates.

2.4 Socio-political instability.

The third and final strand of the literature examines socio-political factors as explanatory variables for exchange rate volatility. Several studies have established that socio-political events are linked to higher exchange rate volatility (see Kutan & Zhou, 1995; Melvin & Tan, 1996; Bouraoui & Hammami, 2017). In particular, Kutan and Zhou (1995), linking socio-political factors to higher exchange rate volatility in post-Communist Poland, find that socio-political unrest increases exchange rate volatility. Country risk (a proxy for political unrest) is captured by a dummy variable based on news stories relating to events reflecting poor socio-political conditions and social unrest, such as strikes, violent demonstrations, political talks, and elections.

In a different study, Melvin and Tan (1996), by exploring the impact of socio-political unrest resulting from racial policies on the volatility of the South African rand, found that its conditional variance was significantly affected by the envisaged socio-political factors. Similarly, Proti (2013) found a significant but negative relationship by investigating exchange rate fluctuations and political tensions in Tanzania. This was due to fear of a new regime's uncertain economic policy, which might affect investors' funds. Similar evidence was established by Saeed et al. (2012) in a study of Pakistan, where political instability was a significant factor that caused the depreciation in Pakistan's exchange rate.

Additional evidence on the relationship between political instability (social unrest) and currency fluctuations are provided by Bouraoui and Hammami (2017), who focused on five countries involved in the Arab Spring. By creating a political instability index to incorporate the frequency of government change, terrorist attacks, revolutionary disorder, regional conflict, and assassinations split into long- and short-term impacts, Bouraoui and Hammami (2017) found that political instability was a significant determinant of exchange rate fluctuations for Egypt and Tunisia in the short term.

There seems to be a consensus that an increase in political instability or socio-political problems will likely increase exchange rate volatility in emerging markets. Even though the U.S. does not necessarily exhibit the same fundamental instability as these developing counties, we can draw several interesting conclusions from the literature that will help in shaping the scope of this study.

Overall, the foundational literature tends to focus on political events, with the use of indices becoming a more viable alternative today. There is also evidence to support the impact of domestic political variables on exchange rates, mainly focused on elections. However, the fact that there has been some notable disregard for partisan variables in the literature, in conjunction with the limited focus on global politics, highlights a genuine scope for further investigation into the link between international politics and exchange rate volatility.

3. DATA AND METHODOLOGY

The data set contains 1096 observations spanning ten federal elections (five presidential and five midterms), covering the first week of January 2000 to the first week of January 2021, and the spot rates for five currency pairs: JPY/USD, GBP/USD CAD/USD, PESO/USD. EURO/USD[4]. These are weekly Wednesday-close data in the spirit of Siokis and Kapopoulos (2003) sourced from the Refinitiv Eikon Datastream. By using three currency pairs with close but varying levels of economic interdependence with the United States, we aim to explore the linkages between international relations/international political economy and exchange rate volatility.

It is well known that the U.S. has many trading partners worldwide, but some countries are more significant trade partners than others. For instance, Canada and Mexico are the top two trading partners of the USA due to their proximity and membership of the North American Free Trade Agreement (NAFTA). Notably, the United States makes up 75.37% of Canadian exports and imports, making it Canada's largest trading partner by a significant margin (WITS, 2021a). Japan, Germany, and France are also major trading partners, especially in the automotive and technology industries, which explains the inclusion of the yen and the euro in the currency pairs. The U.S is the second-largest trade partner for Japan, after China, accounting for 19% of trade (WITS, 2021c). Finally, the U.K. is a key trading partner of the U.S., with a significant volume of goods and services traded between the two countries; the U.S. is the largest exporter market for the U.K., accounting for 15.07% of trade (WITS, 2021b). Overall, the U.S. and the U.K. have a long-standing historical relationship that has shaped the political and economic ties between the two countries and continues to impact their relationship.

In Table 1, we report the summary statistics for the weekly return while the preliminary data analysis indicates the presence of a unit root in the series[5].

[4] In this study, we focus on the top five trading partners of the US, hence the corresponding selection of the five currencies.

[5] For economy of space, we do not report the ADF tests, but they are available upon request.

Table 1. Summary statistics

	JPY return	CAD return	GBP return	PESO return	EURO return
Obs	1,096	1,096	1,096	1,096	1,096
Mean	0.0015	0.0113	0.0163	0.000156	0.000019
StDev.	1.3869	1.2061	1.3665	0.0071	0.0058

In our empirical analysis, we use the volatility of exchange rate returns as the dependent variable. In line with Brogaard et al. (2021), who use U.S. domestic politics as a proxy for global risk in their study on the determinants of exchange rates, we utilise similar methods by delving deeper into the literature on international political economy and bringing into play several new 'political' variables considered to be important. To explore the role of U.S. domestic politics as a proxy for global influence or their role in the international environment, we use political events as proxies for domestic political change or risk.

The first set of political variables are the three electoral variables designed in the spirit of Brogaard et al. (2021), similar to the relevant literature (Lobo & Tufte, 1998; Leblang & Bernhard, 2006) and covering ten federal election cycles – five presidential and five midterm elections. The three electoral variables reflect a six-month period prior to the election, a three-month period prior to the election, and a one-month period prior to the election. Earlier literature (Lobo & Tufte,1998; Siokis & Kapopoulos, 2003) uses only one electoral variable, which is set 16 weeks before the election period, whereas Leblang and Bernhard (2006) take a more nuanced approach and argue for the significance of differentiating between the periods of the electoral cycle. In the same spirit as Leblang and Bernhard (2006), we distinguish between periods before the electoral cycle. In detail, six months prior to the election is effectively the start of the election cycle with six months covering most of the primaries, when the outcomes of primaries become clear and the candidates are essentially decided. Three months is consistent with the time when the Democrat and Republican conventions meet to formally decide who the candidates are. However, as pointed out by Brogaard et al. (2020), this is a relatively quiet period. One month prior to the election is

the final month of campaigning alongside the presidential debates and the eventual vote, arguably the most significant period before an election[6].

The next political variable used is the partisan variable, which follows the same pattern as Lobo and Tufte (1998) based on the rationale of the partisan cycle (Hibbs, 1994). The dummy variable assumes the value of 1during a Democrat presidency and 0 during a Republican presidency[7].

As established in the work of Lohmann and O'Halloran (1994), another potential factor influencing domestic politics or U.S. foreign policy is divided government. This is where a party different to that of the president controls the Congress. As such, we create a divided government dummy variable coded as 1 during periods of divided government and 0 otherwise. As there are two houses of Congress, there can be periods, i.e. the 2001–2003 Congress, where the House of Representatives was Republican, the president was Republican, but the Senate was divided 50/50. In this case, since the vice president, as president of the Senate, has the deciding vote in the Senate, the Senate was classified as being Republican, so the government was classified as not being divided. We expect higher levels of volatility during periods of divided government. The data for U.S. elections and U.S. government composition are taken from the Federal Election Commission and Brookings, respectively.

In line with prior literature (Liu & Pauwels, 2012; Neely, 2005), we also control for the macroeconomic environment. Whilst the literature does not entirely agree on what causes exchange rate volatility, there is some consensus on the critical factors. The first macroeconomic factor included in the model is the OECD recession indicator for Japan, Canada, Mexico, the eurozone, and the U.K. This factor controls for the economic cycle, economic downturns, and recessions. Similarly, we include shocks to the monetary system based on the money supply proxied by M2 (Liu & Pauwels, 2012) but also add the consumer price index (CPI). The money supply (M2) controls for economic and monetary conditions,

6 A fact becoming even more embedded by the 84.4 million people who tuned in for the Trump–Clinton debate, the largest viewership in US history (Statista, 2020).

7 Lobo and Tufte (1998) found that periods of Democrat presidency were met with higher periods of volatility so, in line with their previous findings, we have assigned the value of 1 to a Democrat presidency.

but also, as Bouraoui and Hammami (2017) point out, stands as a transmission mechanism for political events. Monetary growth shocks have also been reported as having an influence on exchange rate volatility in previous research (Mpofu, 2016; Bouraoui & Hammami, 2017; Junttila & Korhonen, 2012). The fourth factor incorporated in the model is the trade environment proxied using trade openness, a commonly used factor in the literature derived from Hau (2002) and utilised by Stancik (2007). Hau (2002) finds a negative and significant relationship between volatility and trade openness, suggesting that higher levels of trade integration lead to a lower level of exchange rate volatility, broadly in line with Mpofu (2016), Stancik (2007), and Suleman and Berka (2017).

Trade openness is also an important variable for our political analysis as hegemonic stability theory finds a connection between trade openness and economic integration. This also helps to incorporate Lohmann and O'Halloran's theory (1994) that divided government leads to lower trade openness through a more protectionist trade policy, which results in potentially higher exchange rate volatility. The fifth control variable used to explain the exchange rate volatility is the volatility of oil prices. Specifically, the oil price enters the equation through the log of WTI Crude as one of the core commodity benchmarks. This is viewed as an important consideration for countries such as Canada and the U.K. Canada represents the world's third largest exporter of oil, accounting for 8% of global oil exports, with 98% going to the United States . Equally, oil is the U.K.'s fifth largest export (IEA, 2021). As Mpofu (2016) points out, commodities can be used as an accurate measurement of terms of trade given the availability of higher frequency data. Thus, the oil price adds robustness to our understanding of the effects of trade conditions in both Canada and the U.K[8]. In line with prior literature (Mpofu, 2016; Siokis & Kapopoulos, 2003), we also control for the non-stationarity in the data by transforming the time series accordingly.

The next step involves establishing the specification of the GARCH(1,1) model. Typically, the literature on exchange rate volatility uses ARCH or GARCH models in dealing with conditional variance (Neeley, 2005). The conditional

[8] See Table A in the Appendix for the definition of variables and sources. Where applicable, we used linear conversion to obtain the same frequency in the dataset.

variance models, as opposed to standard deviation, are superior at dealing with uncertainty, which is relevant here given the unpredictable element of volatility.

The general specification of the model, which is in line with Neeley, (2005), Liu and Pauwels, (2012), and Mpofu (2016), is outlined below:

$$r_t = \gamma_0 + \gamma_1 \Delta r_{t\text{-}1} + \varepsilon_t \quad (2)$$

Whilst higher-order specifications do exist, the present specification is generally accepted to be effective and parsimonious (Mpofu, 2016). The GARCH term refers to the persistence of the volatility or the long-run volatility. Strictly speaking, providing $\alpha_0 \geq 0$, $\alpha_1 \geq 0$, $and\ \beta_1 \geq 0$, we will have positive conditional variance. Furthermore, by providing $\alpha_1 + \beta_1 < 1$, there is sufficient evidence for a second moment in the equation (Liu & Pauwels, 2012). The final specification for model outlined in equation (2) is as follows:

$$r_t = \gamma_0 + \gamma_1 \Delta_{r\text{-}1} + \zeta_1 USelec1_t + \zeta_2 USelec3_t + \zeta_3 USelec6_t + \zeta_4 Divgov_t + \zeta_5 Partisan_t + \zeta_6 Reces_t + \zeta_7 M2_t + \zeta_8 CPI_t + \zeta_9 Oil_t + \zeta_{10} UST\text{ROP}_t + \zeta_{11} T\text{ROP}_t + \varepsilon_t \quad (3)$$

$$\text{Var}(\varepsilon_t) = \sigma_t^2 = a_o + a_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2 + \text{Exp}(\zeta_1 \text{USelec1}_t + \zeta_2\ \text{USelec3}_t + \zeta_4 \text{Divgov}_t + \zeta_5 Partisan_t + \zeta_6 Reces_t + \zeta_7 M2_t + \zeta_8 CPI_t + \zeta_9 Oil_t + \zeta_{10} UST\text{ROP}_t + \zeta_{11} T\text{ROP}_t), \quad (4)$$

where r_t denotes the volatility of exchange rate returns; $\Delta_{r\text{-}1}$ is the first difference of the lagged value of exchange rate volatility; $USelec1_t$, $USelec3_t$, and $USelec6_t$ denote the three electoral variables reflecting a one-month period, a three-month period, and a six-month period prior to the election; $Partisan_t$ is the partisan variable that takes the value of 1during a Democrat presidency and 0 during a Republican presidency; $Divgov_t$, is the divided government dummy, which assumes the value of 1 during periods of divided government and 0 otherwise; $Reces_t$ is OECD recession indicator; $M2_t$ is the money supply; CPI_t is a measure of inflation; Oil_t is the volatility of oil prices; $UST\text{ROP}_t$ denotes U.S. trade openness whereas $T\text{ROP}_t$ denotes trade openness of the respective economies (Japan, the U.K., and Canada) which alternate in the three different estimated models. Equation 4 is the standard specification of the variance equation in the GARCH(1,1) specification.

In line with past literature (see Lobo & Tufte, 1998; Siokis & Kapopoulos, 2003; Liu & Pauwels, 2012), we include the independent variables in the mean return equation. To ensure robustness, we repeat the regression individually, removing and adding the election dummy variables to account for collinearity moving from the one-month, then adding the three-month, and finally looking at the six-month alone (see Tables 2, 3 and 4).

4. EMPIRICAL RESULTS

We report the results of the regressions in Tables 2, 3, and 4 for the currency pairs CAD/USD, GBP/ USD, and JPY/USD, respectively. We determine the best-fit model based on the AIC and BIC criteria, and we use robust standard errors to improve the robustness of the results. In line with the literature, our results on the implications of politics or international political economy on exchange rate volatility are mixed. While it seems that the political variables have little to no effect on the mean exchange rate, evidence suggests that these variables are significant for the conditional variance. At this point, we note that our paper aims to reveal the impact of political variables on exchange rate volatility and not the determinants of the exchange rate by focusing on the conditional variance equation.

Among the political variables, the election variables present the most indistinct results. Generally, one should expect countries with the highest level of economic integration to be the most impacted by exchange rate volatility during an election season. However, our results suggest this was not the case in the examined period. Starting with Canada in Table 2, the election dummy variables for the first, third, and sixth months were all insignificant for the mean return equation. The result is consistent with previous studies (see, for example, Siokis & Kapopoulos, 2003; Lobo & Tufte, 1998; Leblang & Bernhard, 2006) where electoral variables were found to be insignificant in the mean equation. However, the conditional variance tells a different story.

While the six-month and three-month variables were both insignificant, the one-month variable was significant at the 10% level, which is in line with Lobo and Tufte (1998). This evidence is also consistent with both Leblang and Bernhard (2006) and Siokis and Kapopoulos (2003), who investigated different pairs of currencies. The large change in the coefficient size from models 1 to 2 suggests

that the scale of this increase in volatility is unclear and inconsistent. However, for Canada, the signs of the coefficients are interesting in that we see a positive coefficient for one month, suggesting an increase in volatility, a negative coefficient for three months, and a positive coefficient for six months. Although the six and three months were insignificant, the general pattern is consistent with what was expected. During the primaries and presidential debates, we see more uncertainty and higher volatility, but during a quiet period three months prior, the volatility is lower.

Table 2: CAD/ USD regression results

Model	1		2		3		4	
	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error
Mean Equation								
Intercept	-1.865	2.071	-2.646	2.104	-2.608	2.109	-2.534	2.113
Political Variables								
US election 1 month	0.133	0.179	0.075	0.145				
US election 3 month	-0.031	0.147			0.013	0.105		
US election 6 month	-0.024	0.090					-0.015	0.069
Divided Government	-0.007	0.103	0.020	0.107	-0.007	0.089	0.012	0.106
Partisan	0.147*	0.855	0.135*	0.094	0.1457*	0.093	0.145*	0.094
Macroeconomic Controls								
Recession	-0.050	0.071	-0.039	0.074	-0.032	0.073	-0.032	0.073
US Trade Openess	0.509	0.529	0.266	0.561	0.300	0.559	0.312	0.557
CAN Trade Openess	1.431**	0.682	1.342**	0.684	1.369**	0.681	1.363**	0.682
Inflation	0.607	0.439	0.691*	0.424	0.696	0.427	0.684*	0.427
Crude Oil	-3.989***	0.493	-4.601**	0.648	-4.590***	0.636	-4.592***	0.634
Money Supply (M2)	2.118***	1.481	2.156***	1.539	2.149***	1.540	2.154***	1.544
Conditional Variance								
Intercept	13.923*	7.520	13.060*	7.480	13.518*	7.343	13.809*	7.579
Political Variables								
US election 1 month	1.817*	1.316	0.376*	0.323				
US election 3 month	-1.340	1.335			-0.184	0.315		
US election 6 month	0.042	0.397					-0.127	0.253
Divided Government	0.597*	0.375	0.652*	0.376	0.545*	0.361	0.557	0.368
Partisan	-0.559**	0.298	-0.603**	0.297	-0.497**	0.283	-0.509	0.284
Macroeconomic Controls								
Recession	0.170	0.227	0.159	0.228	0.207	0.222	0.207	0.225
US Trade Openess	-0.364	2.134	-0.425	2.101	-0.404	2.078	-0.313	2.118
CAN Trade Openess	-5.279**	2.376	-5.088**	2.422	-5.219**	2.302	-5.139*	2.323
Inflation	-4.063***	1.447	-3.891***	1.479	-3.968***	1.431	-4.002***	1.469
Crude Oil	-9.872***	2.821	-10.347***	2.763	-9.961***	2.749	-9.920***	2.779
Money Supply (M2)	2.278	1.979	1.772	0.332	2.157	1.633	2.174	1.656
ARCH & GARCH								
ARCH	0.100***	0.0249	0.102***	0.0241	0.106***	0.023	0.106***	0.023
GARCH	0.820***	0.3562	0.821***	0.0337	0.812***	0.035	0.814***	0.034
AIC	3225.958		3219.460		3220.908		3221.105	
BIC	3355.943		3329.450		3330.895		3331.096	
PseudoLoglikelihood	-1586.227		-1587.730		-1588.454		-1588.553	
Number of observations	1096		1096		1096		1096	
WaldChi2(11)(9)	88.66		89.33		89.42		89.42	

Notes: ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

Table 3: GBP/ USD regression results

Model	1		2		3		4	
	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error
Mean Equation								
Intercept	-1.561**	0.726	-1.446**	0.729	-1.484**	0.721	-1.577**	0.722
Political Variables								
US election 1 month	-0.050	0.217	0.095	0.186	0.585	0.241		
US election 3 month	0.087	0.153			0.133	0.106		
US election 6 month	0.082	0.109					0.114*	0.082
Divided Government	0.360***	0.119	0.335***	0.118	0.351***	0.117	0.357***	0.117
Partisan	0.018	0.104	0.035	0.103	0.027	0.103	0.019	0.104
Macroeconomic Controls								
Recession	0.061	0.091	0.071	0.088	0.073	0.088	0.056	0.090
US Trade Openess	-1.618**	0.704	-1.487**	0.706	-1.514**	0.700	-1.645**	0.701
UK Trade Openess	1.618**	0.712	1.482**	0.713	1.501**	0.710	1.651**	0.710
Inflation	2.046	1.912	2.050	1.908	2.045	1.911	2.047	1.912
Crude Oil	-2.942***	0.613	-2.952***	0.616	-2.938***	0.613	-2.947***	0.611
Money Supply (M2)	1.817***	1.379	1.830***	1.372	1.821***	1.373	1.820***	1.379
Conditional Variance								
Intercept	-5.737***	1.539	-5.502***	1.505	-5.605***	1.507	-5.779	1.502
Political Variables								
US election 1 month	0.112*	0.085	0.164*	0.036				
US election 3 month	-0.023	0.306			-0.030	0.301		
US election 6 month	0.220	0.210					0.186*	0.138
Divided Government	0.085	0.204	0.072	0.200	0.074	0.202	0.090	0.198
Partisan	0.398**	0.170	0.428***	0.162	0.424***	0.155	0.399***	0.149
Macroeconomic Controls								
Recession	0.378**	0.171	0.421***	0.163	0.404	0.166	0.381**	0.164
US Trade Openess	-2.703***	1.449	-2.465***	1.422	-2.598	1.420	-2.729**	1.409
UK Trade Openess	0.078	1.317	-0.145	1.319	0.002	1.327	0.061	1.297
Inflation	2.987***	1.309	2.967***	1.298	2.966***	1.307	2.970***	1.303
Crude Oil	-11.231***	1.689	-11.043***	1.664	-11.002***	1.357	-11.126	1.271
Money Supply (M2)	1.875	1.807	1.880	1.865	1.863	1.845	1.866	1.790
ARCH & GARCH								
ARCH	0.082***	0.028	0.087***	0.025	0.091***	0.026	0.0831***	0.025
GARCH	0.706***	0.057	0.696***	0.054	0.695***	0.052	0.705***	0.049
AIC	3571.807		3567.653		3569.924		3564.221	
BIC	3701.792		3677.64		3689.910		3674.208	
PseudoLoglikelihood	-1759.9		-1761.827		-1760.962		-1760.110	
Number of observations	1096		1096		1096		1096	
WaldChi2(11)(9)	39.71		38.29		41.00		40.33	

Notes: ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

Table 4: JPY/USD regression results

Model	1		2		3		4	
	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error
Mean Equation								
Intercept	-0.025	0.800	0.106	0.787	0.108	0.786	0.098	0.799
Political Variables								
US election 1 month	-0.188	0.213	-0.081	0.195				
US election 3 month	0.273*	0.154			0.074	0.130		
US election 6 month	-0.145	0.109					-0.065	0.092
Divided Government	0.090	0.107	0.044	0.108	0.044	0.109	0.064	0.106
Partisan	0.060	0.122	0.052	0.113	0.047	0.114	0.079	0.115
Macroeconomic Controls								
Recession	-0.062	0.082	-0.056	0.082	-0.049	0.081	-0.071	0.081
US Trade Openess	-0.069	0.758	0.067	0.747	0.067	0.748	0.012	0.752
JPN Trade Openess	0.090	0.311	0.051	0.317	0.066	0.318	0.099	0.319
Inflation	-3.495	71.920	5.601	69.153	3.109	68.943	-3.383	69.237
Crude Oil	-0.191	0.811	-0.062	0.828	-0.047	0.826	-0.070	0.840
Money Supply (M2)	1.906**	0.811	1.908**	0.828	1.930***	0.826	1.887**	0.840
Conditional Variance								
Intercept	-7.173***	2.024	-3.796***	1.502	-3.599*	1.491	-3.392**	1.442
Political Variables								
US election 1 month	1.560*	0.857	0.693***	0.248				
US election 3 month	1.319***	0.392			0.125	0.181		
US election 6 month	-1.381***	0.719					-0.221*	0.149
Divided Government	1.346***	0.330	0.681***	0.205	0.730***	0.212	0.739***	0.204
Partisan	-0.473**	0.243	-0.247*	0.163	-0.273*	0.163	-0.237*	0.156
Macroeconomic Controls								
Recession	0.000	0.214	-0.233	0.158	-0.250*	0.157	-0.266*	0.156
US Trade Openess	-3.529**	1.647	-1.282	1.220	-1.132	1.193	-1.030	1.155
JPN Trade Openess	0.180	0.680	-0.198	0.522	-0.232	0.510	-0.239	0.508
Inflation	-5.313	4.053	-3.793	2.584	-4.081	2.527	-4.934*	2.575
Crude Oil	-2.166	4.163	-4.278*	2.589	-4.967**	2.352	-5.130	2.207
Money Supply (M2)	1.992	1.188	1.990	1.278	1.995	1.260	1.847	1.268
ARCH & GARCH								
ARCH	0.070***	0.017	0.086***	0.022	0.088***	0.022	0.085***	0.022
GARCH	0.878***	0.021	0.804***	0.039	0.801***	0.040	0.802***	0.039
AIC	3744.698		3754.397		3758.942		3757.469	
BIC	3869.683		3864.386		3868.930		3867.457	
PseudoLoglikelihood	-1847.349		-1857.471		-1857.471		-1856.735	
Number of observations	1096		1096		1096		1096	
WaldChi2(11)(9)	11.6		9.96		11.09		11.39	

Notes: ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

Table 5: PESO/USD regression results

Model	1		2		3		4	
	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error
Mean Equation								
Intercept	-2.673	3.134	-2.893	3.732	-3.085	3.984	-3.794	3.749
Political Variables								
US election 1 month	0.023	0.297	0.066	0.158				
US election 3 month	0.084	0.313			0.027	0.165		
US election 6 month	-0.062	0.193					-0.183	0.167
Divided Government	-0.001	0.203	0.031	0.207	-0.019	0.185	0.175	0.216
Partisan	0.062***	0.005	0.216***	0.019	0.192***	0.018	0.092***	0.001
Macroeconomic Controls								
Recession	-0.021	0.172	-0.163	0.963	-0.096	0.098	0.099	0.172
US Trade Openess	0.197	0.324	0.162	0.199	0.168	0.322	0.172	0.287
MEX Trade Openess	0.789***	0.083	1.253*	0.774	1.026**	0.472	1.037**	0.494
Inflation	0.028	0.672	0.189	0.924	0.563	0.893	0.427	0.703
Crude Oil	-3.681**	0.034	-3.389***	0.063	-3.680***	0.037	-3.246***	0.08
Money Supply (M2)	35.993***	15.784	22.794***	4.603	19.784***	14.392	16.678***	9.683
Conditional Variance								
Intercept	8.784***	3.393	8.089***	2.643	8.584***	3.684	8.694*	2.683
Political Variables								
US election 1 month	0.589*	0.325	0.457***	0.199				
US election 3 month	-0.983	0.998			-0.563	0.468		
US election 6 month	0.183	0.828					-0.093	0.159
Divided Government	0.087***	0.015	0.052***	0.003	0.035***	0.011	0.673	0.583
Partisan	-0.362***	0.019	-0.273***	0.117	-0.268**	0.028	-0.119	0.343
Macroeconomic Controls								
Recession	0.189	0.364	0.194	0.246	0.327	0.294	0.301	0.273
US Trade Openess	-0.274	1.484	-0.392	1.633	-0.203	1.123	-0.124	1.263
MEX Trade Openess	-1.889**	0.034	-1.374***	0.384	-1.673***	0.232	-1.282***	0.182
Inflation	-2.164***	0.183	-2.744***	0.639	-2.733***	0.431	-2.116***	0.372
Crude Oil	-3.263***	0.784	-4.642***	1.012	-4.477***	1.153	-4.573***	1.112
Money Supply (M2)	13.366	10.494	12.433	8.673	12.933	10.573	11.477	9.673
ARCH & GARCH								
ARCH	0.113***	0.003	0.167***	0.009	0.128***	0.019	0.166***	0.013
GARCH	0.639***	0.162	0.621***	0.027	0.673***	0.051	0.676***	0.018
AIC	3739.673		3763.782		3730.892		3739.173	
BIC	3248.263		3294.378		3274.538		3291.783	
PseudoLoglikelihood	-1467.638		-1468.733		-1469.462		-1468.738	
Number of observations	1096		1096		1096		1096	
WaldChi2(11)(9)	78.47		78.83		78.45		78.49	

Notes: ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

Table 6: EURO/USD regression results

Model	1		2		3		4	
	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error	Coefficient	St. Error
Mean Equation								
Intercept	-3.783**	1.253	-3.673***	0.247	-3.356***	0.326	-3.382**	0.189
Political Variables								
US election 1 month	-0.023	0.132	0.053	0.234	0.273	0.263		
US election 3 month	0.025	0.231			0.184	0.194		
US election 6 month	0.462	0.305					0.236***	0.073
Divided Government	0.157***	0.0147	0.187***	0.083	0.189***	0.068	0.178***	0.037
Partisan	0.194	0.203	0.283	0.193	0.274	0.178	0.264	0.874
Macroeconomic Controls								
Recession	0.034	0.194	0.036	0.174	0.189	0.199	0.174	0.178
US Trade Openess	-0.461***	0.045	-0.774***	0.046	-0.639***	0.017	-0.584***	0.015
EU Trade Openess	0.873***	0.112	0.872**	0.143	0.419***	0.01	0.138***	0.09
Inflation	5.844	4.983	6.148	6.84	8.484	8.894	11.734	8.844
Crude Oil	-1.592***	0.016	-1.458***	0.014	-1.874***	0.015	-1.788***	0.021
Money Supply (M2)	45.694	33.984	43.834	33.894	46.844	33.743	36.783	28.784
Conditional Variance								
Intercept	-3.783***	1.384	-2.893***	1.207	-3.783***	1.487	-3.373***	1.082
Political Variables								
US election 1 month	0.153***	0.073	0.153***	0.046				
US election 3 month	-0.033	0.366			-0.047	0.561		
US election 6 month	0.38	0.516					0.176*	0.128
Divided Government	0.095	0.304	0.066	0.256	0.089	0.258	0.078	0.204
Partisan	0.467***	0.109	0.578***	0.247	0.498***	0.135	0.482***	0.123
Macroeconomic Controls								
Recession	0.057**	0.007	0.012***	0.003	0.041***	0.006	0.035**	0.004
US Trade Openess	-1.387***	0.491	-1.545***	0.282	-1.874***	0.48	-1.279***	0.462
EU Trade Openess	0.278	1.747	-0.193	1.983	0.004	1.734	0.073	1.279
Inflation	7.441***	2.483	7.793***	2.483	7.083***	2.983	7.997***	2.744
Crude Oil	-3.376***	0.783	-3.238***	0.453	-3.277***	0.373	-3.473	0.981
Money Supply (M2)	24.893	17.833	25.83	14.893	26.916	20.833	21.003	19.8093
ARCH & GARCH								
ARCH	0.063***	0.018	0.099***	0.013	0.088***	0.011	0.078***	0.012
GARCH	0.678***	0.023	0.786***	0.038	0.783***	0.013	0.892***	0.029
AIC	3743.807		3589.399		3673.893		3788.893	
BIC	3701.792		3677.474		3689.973		3674.373	
PseudoLoglikelihood	-1698.993		-1698.363		-1698.673		-1698.673	
Number of observations	1096		1096		1096		1096	
WaldChi2(11)(9)	26.45		28.47		30.99		30.47	

Notes: ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

The results for the U.K. shown in Table 3 are similar to those of Canada. As expected, none of the electoral dummy variables for the mean equation were significant. Like Canada, the U.K. demonstrates that the one-month U.K. variable was significant at the 10% level in the conditional variance equation, which is in line with Leblang and Bernhard (2006). However, we also find that the coefficients change significantly between models 1 and 2 for the U.K. Beyond this,

the 3-month and 6-month variables were both insignificant and remained insignificant in model 3 and 4. The fact that there was evidence of significance for U.S. elections on GBP/USD and higher resulting volatility is generally consistent with Lobo and Tufte (1998). Moreover, we find that all three variables followed the same pattern of coefficient signs as in Canada.

Japan presents the most puzzling results compared to Canada and the U.K., as shown in Table 4. In the mean return equation, there was a significant increase in returns for JPY/USD for the three-month variable, which suggests higher returns in this period. However, this is only in the case of model 1, since it turned out to be insignificant in model 3. The importance of this variable is inconsistent with prior research (Lobo & Tufte, 1998). The conditional variance model provides more certain results than Canada and the U.K. In model 1, all the electoral variables were significant, with the six-month and three-month at the 1% level and the one-month at the 10% level. In model 2, the one-month was significant at the 1% level. Similarly, in model 4, the six-month variable was significant at the 10% level whilst in model 3, the three-month variable was insignificant. Ultimately, there is sufficient evidence to claim that for Japan, the one-month and six-month election variables were significant. Like Canada and the U.K., the one-month was positive, so we see higher volatility before an election. This finding is again consistent with Lobo and Tufte (1998). The significant six-month variable displays a negative coefficient, a surprising outcome considering our expectation of higher volatility six months prior.

In the case of Mexico and the eurozone, Tables 5 and 6, the election dummies for the one-, three-, and six-month variables were all insignificant in the mean return equation, as was the case for Canada. In the conditional variance equation, however, the one-month variable was significant at the 10% and 1% levels, respectively, in line with Lobo andTufte (1998).

Generally, an important pattern can be discerned in that the five currency pairs displayed positivesignificant coefficients in the conditional variance of our one-month election variable. This suggests an increase in volatility one month before a U.S. election, a finding consistent with prior findings. Additionally, it is relatively clear that proximity to elections was not significant in our mean return equation. However, in the conditional variance equation, no discernible pattern

was established for the three- and six-month variables. Furthermore, we found little evidence to suggest an increase in the impact of U.S. elections based on economic interdependence, as Japan generally displayed the highest significance levels across our variables.

The partisan variable provided relatively consistent and intriguing results. Based on previous studies (Siokis & Kapopoulos, 2003; Lobo & Tufte, 1998), we expected the partisanvariable to be insignificant in the mean return equation but significant and positive in the conditional variance equation. Across all five currency pairs, the partisan variable was insignificant in the mean return equation apart from the case of Mexico, which was highly significant. The conditional variance equation, however, offers a very different narrative. The partisan variable was significant at varying levels of significance i.e., ranging between the 10% and 1% levels, for all pairs. However, the sign of the coefficient varied between nations.

For Canada, Japan, and Mexico, the partisan coefficient was negative, suggesting that periods of a Democrat presidency generally led to lower periods of volatility. This contrasts with the conclusions of Lobo and Tufte (1998) and Blomberg and Hess (1997). However, for the U.K. and the eurozone, the positive sign suggests higher periods of volatility during a Democrat presidency, which is consistent with what was expected. Even though we do not find a consistent impact of a Democrat presidency on volatility, we can argue that there is evidence that partisan factors do have some impact on the conditional variance, thus supporting the idea that the partisan cycle is a key variable.

The divided government variable as per Lohmann and O'Halloran (1994) suggests that we will see higher volatility for exchange rates during periods of divided government. We should note that the impact of this variable has not been investigated in the extant literature. It is expected that during a divided government, we see higher levels of isolationism and hence lower levels of trade openness from tighter trade policies. Hau (2002) and Mpofu (2016) have demonstrated an inverse relationship between trade openness and currency volatility, so we expect higher volatility during divided government, which is consistent with our results from our trade openness control variable. As expected, apart from in the case of the U.K. and the eurozone, the divided government

variable was insignificant in the mean return equation. Turning to the conditional variance equation, we find some mixed, yet important, results. For the CAD and PESO, the findings were positive and consistently significant across most of the models. On a stand-alone basis, these results loosely support our hypothesis that we see higher levels of volatility during a divided government.

Interestingly, Japan tells a similar story with the divided government variable being positive and significant at the 1% level across all four models. The size of the coefficients suggests that the JPY experiences the highest volatility during a divided government. However, we find consistency in the coefficients for models 2, 3, and 4, which still confirms this conclusion compared to Canada.

In the U.K. and eurozone estimations, divided government was found to be insignificant across all the models, but it did display a positive coefficient, which is in line with our expectations. Generally, we can say that our theoretical hypothesis of higher volatility is a valid conclusion to draw from the results, as 3 out of 5 countries confirmed this.

Although our study mainly focuses on political variables, important conclusions can be drawn from the control variables in the conditional variance equations. Across most models, we found that inflation and crude oil were generally significant determinants of volatility. However, unexpectedly, we provide evidence of lower periods of volatility during higher volatility in the crude oil market, which is a surprising finding.

Generally, our findings were consistent with those of Hau (2002) and later literature, such as Stancik (2007) and Mpofu (2016). We found that apart from in the case of Mexico, the U.S. trade openness variable was significant with a negative coefficient. The latter confirms our assumption that higher trade openness potentially leads to lower volatility in the exchange rate. This is almost certain for the GBP and EURO, which displayed significance at the 1% level across most of the estimated models, possibly reflecting the strong economic relationship between these countries.

Japan displays limited significance for U.S. trade openness as only in model 1 did we find trade openness to be significant at the 5% level. Arguably, the later models found more consistency in the coefficient, indicating a better fit, thus making it

generally challenging to conclude about the JPY. Furthermore, given that U.S. trade openness is relevant to the theoretical underpinning for the divided government variable, the lack of significance questions our understanding of the results presented by the divided government variable for Japan.

There are definitive signs of ARCH and GARCH effects in all five currencies and models. We see that across all currencies and varying models, both ARCH and GARCH terms are significant and positive at the 1% level. This is expected and is consistent with the earlier literature using the GARCH (1,1) model (Liu & Pauwels, 2012). The data from the ARCH term across the four models suggests that Canada experiences the highest level of volatility in the short run, with Japan experiencing the lowest levels of volatility. In the GARCH term, Japan experiences the greatest persistence in volatility based on a single time lag. The finding that the JPY experiences higher persistence than the CAD, GBP, PESO, and EURO are consistent with the findings of Lobo and Tufte (1998). However, as observed in the literature, there are often asymmetric effects whereby adverse news has a greater effect on volatility than good news[9].

In sum, as far as the electoral variables are concerned, the 6-month and 3-month variables were found to be insignificant. However, for the five currencies we did find the one-month electoral variable to be significant (albeit at 10%) and positive, suggesting an increase in volatility in the month before an election as uncertainty grows and the electionbecomes more contentious. Furthermore, the most important results came from the partisan and divided government variables. Generally, we see that there are partisan effectson exchange rates, albeit with variability in the sign of these coefficients, thus suggesting a varying impact on different currencies. Additionally, we find that divided government was a factor in increasing exchange rate volatility in three out of the five currencies, which helps to confirm our hypothesis as based on Lohmann and O'Halloran's divided government theory.

4.1 Discussion

In placing the obtained results into context with our initial theoretical stance, several points can be made. Although exchange rate volatility around election

[9] It seems that the GARCH (1,1) model does not differentiate between bad and good news volatility, which is arguably a weakness.

cycles has been extensively investigated, the results have been inconsistent. However, there is a general consensus concerning an increase in volatility in the period before elections. Generally, our results are consistent with these prior findings, even though our election variable presented the weakest results of all the political variables. A solid conclusion we can draw is that exchange rate volatility increased one month prior to an election, and this was only significant at the 10% level across all models. This loosely supports the PBC hypothesis, whereby a potential rationale for the increase in volatility prior to election periods results from politicians attempting to target popular economic policies that will increase their chances of election, as distinct from their policies in non-election years.

Arguably, there is evidence that our results support a more straightforward explanation as presented by Garfinkelet al. (1999), who argue that volatility is related to uncertainty over the change in policy outcomes following an election, similar to the argument imparted by Freeman et al. (2000). This is more reminiscent of the partisan theory (PT), which states that in a close election, there is higher uncertainty regarding policy due to parties having different ideological positions, which is reflected in their policies. This explanation is not consistent with the assumption laid out in the PBC where an electorate is a homogenous group. In theory, economic policy should not vary because of ideological factors but due to an election cycle (Nordhaus, 1975). Therefore, PT is a more plausible explanation.

Furthermore, the insignificance of our three-month and six-month variables is not in line with broader evidence offered by Lobo and Tufte (1998), Siokis and Kapopoulos (2003), and Leblang and Bernhard (2006), whose variables were designed for an electoral year or 16 weeks before an election, hence suggesting that we will see higher volatility during these periods. An argument can be made that the insignificance of these variables can be explained by previous studies suggesting that not every election has the same significant implications.

For instance, Leblang and Bernhard (2006) found only 11 out of 23 elections in their sample to be statistically significant. This reflects the efficient market hypothesis theory, according to which only uncertainty will cause changes in the market environment, otherwise it is priced in. Arguably, the decision to take the electoral variable within a single aggregated study diluted our understanding of

characteristics surrounding individual elections. Some elections were potentially more volatile than others and our results were too general. One of the problems of looking at partisan variables and electoral variables is that one is best suited to a disaggregated event study but the other needs time series analysis. This study was conducted using an aggregated time-series model,which may be why we obtained more robust results for the partisan variable and fragmented results for the electoral variables.

Our partisan variable turned out to be significant in the conditional variance. However, the results suggesting how the partisan cycle affects volatility are somewhat unclear, but based on three out of the five currencies exhibiting lower volatility, there is evidence for a loose conclusion surrounding Democrat presidencies experiencing lower volatility. In the foundational work by Lobo and Tufte (1998), they concluded that partisanship was a significant variable leading to higher volatility during a Democrat presidency, which was also consistent with Blomberg and Hess (1996).

There are several ways one can explain the conflicting evidence. Firstly, Lobo and Tufte's sample contained just one Democrat presidency, that of Jimmy Carter, which only lasted a single term, so merely four out of twenty years were Democrat-oriented, with their sample being overwhelmingly dominated by Republican presidencies. In contrast, our sample saw parts of three Democrat presidencies, which accounted for nine out of twenty years of our sample. Our larger sample might thus help to provide a better estimation of partisan effects. Additionally, the Carter presidency was fraughtwith economic shocks, such as stagflation and an oil crisis, which meant policy focus largelymoved away from full employment to anti-inflationary measures (Ponder, 2003). These policies are contrary to traditional Democrat policies, which we saw more of during the Clinton and Obama presidencies in the form of large spending packages and expansion of the welfare state. Moreover, for the most part, Obama's presidency covered a period of relative recovery after the global financial crisis.

Generally, the distinction between the levels of volatility between a Republican and Democrat presidency largely confirms the partisan theory. An argument can be made that this volatility reflects variations in policies along partisan and ideological lines resulting in the targeting of different optimal policies in

accordance with the Philips curve trade-off, although, given the Democrats' traditional preference towards social welfare policy, we would expect an increase in volatility as traditionally pro-inflationary policies are implemented. However, there is an argument that partisan distinctions between traditional inflationary vs employment have become convoluted in the post-global financial crisis world. Pro-employment policies were the core of Trump's government, which pressured the Fed into cutting ratesto record lows to counteract the effects of protectionist policies and stimulate the economy (Smialek, 2019). Arguably, evidence from our trade openness and divided government variables support the conclusion that protectionist policies are associated with currency volatility. The fact that the results of our study are different to those of prior studies might suggest that partisan compositions and policy preferences have changed since the original studies of the 1990s.

The results of the divided government variable largely supported our hypothesis laid out by divided government theory (Lohmann & O'Halloran, 1994), suggesting that divided government can lead to higher volatility. The explanation put forward by this theory argues that this is dueto more isolationist policies being adopted as the executive is limited in its function in supporting foreign trade. Generally, the finding regarding higher trade openness lowering exchange rate volatility supports this notion. Although this theory is only a potential explanation, we find evidence of a connection between the two, and our findings generally add credence to Lohmann and O'Halloran (1994).

5. CONCLUDING REMARKS

In this paper, we sought to link U.S. domestic politics with exchange rate behaviour in a modern setting. We also sought to connect the dots between the literature on the international political economy with the finance literature. This is achieved by employing the GARCH methodology and utilising past literature and theoretical underpinnings to establish potential variables that can be used in further explaining exchange rate behaviour.

This study's unique direction is reflected by adding a previously uninvestigated variable (divided government) in the context of the international political economy literature. The political landscape has undoubtedly changed since the

foundational literature of Lobo and Tufte (1998),Siokis and Kapopoulos (2003), and Leblang and Bernhard (2006).

Our investigation found mixed but interesting results. For one thing, the mean equation didnot yield significant results, which was expected and consistent with prior literature. Going deeper, the conditional variance equation, which focused on volatility, provided evidence that domestic U.S. politics has a significant effect on exchange rate volatility.

The most robust results we found were those for the partisan variable. Specifically, we found that partisanshipwas a significant variable for exchange rate return volatility across all currency pairs at a reasonable and consistent significance level. Furthermore, we found that Democrat presidencies present lower volatility than Republican ones, although this was not consistent across all the currency pairs; the evidence loosely suggests this to be the case. Such evidence broadly supports the notion put forward that ideological preferences in U.S. politics affectexchange rate volatility.

We also provide evidence to support the divided government theory. We find that there is a significant increase in volatility in relation to the CAD, PESO, and JPY during periods of divided government.We interpret this as evidence for the notion that periods of divided government see higher levels of isolationist policies by the U.S. as Congress limits the foreign policy role of the executive. Therefore, trade policy becomes more uncertain, and the U.S. experiences reduced trade openness. The evidence from the analysis of trade openness provides some support for this, i.e., the divided government theory of Lohmann and O'Halloran (1996). The latter was a previously unexplored variable in the study of foreign exchange markets. The relatively concrete results contribute to our understanding of politics and exchange rate behaviour.

We found limited evidence for the electoral variables consistent with the partisan business cycle theory. The most concrete evidence we report suggests a significant increase in volatility one month before an election across the five currencies. We argue that our results are more supportive of the partisan theory. Although this support is relatively weak, it is still valuable. On balance, we find that U.S. politics, through its various factors, influences global exchange rate behaviour, which might be a consequence of the hegemonic position of the U.S.

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APPENDIX

Table A. Definition of variables and sources

Political Variables		
U.S. election 1 month	An indicator variable equal to one in a month that is one month prior to a U.S. Presidential election	Federal Election Commission
U.S. election 3 month	An indicator variable equal to one in a month that is three months prior to a U.S. Presidential election	Federal Election Commission
U.S. election 6 month	An indicator variable equal to one in a month that is six months prior to a U.S. Presidential election	Federal Election Commission
Divided Government	A dummy variable which assumes the value of 1 during periods of divided government and 0 otherwise	Brooking
Partisan	A dummy variable assuming the value of 1 during a Democrat presidency and 0 during a Republican presidency	Authors
Macroeconomic Controls		
Recession	OECD recession indicator	OECD
Trade Openness	Trade in goods and services: Import + Exports (% GDP)	OECD
Inflation	Consumer Price Index	OECD
Crude Oil	Natural logarithm of WTI Crude Oil price	FRED
Money Supply (M2)	Growth rate of the Money Supply (M2)	OECD

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