International Currency Correlation

The Honors Program
Senior Capstone Project
Student's Name: Thomas Griffin
Faculty Sponsor: A. Can Inci
April 2017

Table of Contents

ABSTRACT

The purpose of this project is to examine the effects that one country's currency can have on another countries currency. Currency is one of the key determinants of how a country's economy is performing compared to the rest of the world. Some currencies have a negative or positive correlation with other currencies around the world. This data will help investors determine what they can expect to happen to a countries currency when there is a fluctuation in another currency. Certain industry practices where this information will be useful include the hedge fund industry and other global companies. This will be an analytical study looking at fluctuations of different interest rates and currencies around the world. In the end, I am interested in finding out the impact one currency can have on another currency, while at the same time determining if certain models such as the Fama Model still hold true.

PROJECT PROPOSAL SCOPE, FOCUS

The purpose of this project is to examine the effects one country's currency can have on another. There are two main questions that this project will answer: One, is there a correlation between certain currencies with respect to their movements; and is the correlation positive or negative? Two, does the Fama model still hold true? The main impetus behind this topic is that I want to learn more about what is happening to currencies in recent years focusing on the impact globalization has on different markets. Previous literature reflects a different era of tighter cross country controls over commodities and currency. Capital controls are measures taken by a government to regulate the amount of foreign capital and goods into another country. Today, capital controls have been removed and the currency movements are even more important. My hypothesis is that the research results are more significant and the correlation between different countries' currencies is greater than ever before. This topic is relevant to today's global economy because consumers constantly see fluctuations in the values of currencies. Many ask "why is this happening?" The fluctuations of currencies can have a dramatic impact on individuals, companies and countries around the world.

Money is a commodity used every day all around the world. Today's global economy has well over one hundred different currencies and this number is continuing to grow. The value of money is determined by what uses that currency has in today's global economy. For example, the United States dollar is considered to be one of the strongest currencies in the world today, not because the dollar is a universal currency and is considered to be one of the strongest countries, but because the United States dollar is used in countries' economies and markets all around the world. Even though the United States dollar is very strong, every day the value of the dollar is fluctuating up and down. The same goes for currencies around the world. What some people fail to realize is that while some currencies are increasing in value, others are decreasing at the same time. Its all about supply and demand for currency.

Many researchers have examined the correlations between different currencies over time in order to determine what effects one currency directly has on another country. This project is different from previous studies in several ways. First, I conduct my own linear regression analysis using the Fama Model to see currencies are correlated. Second, I will check to see if there is any triangular correlation between currencies. Third, once I determine

the correlation between currencies, I will check the data to see if certain models still hold true. Last, I will check to see if any arbitrage opportunities currently exist in today's foreign exchange market.

RESEARCH METHODOLOGY OR CREATIVE PROCESS APPROACH

In order to proceed with finding international currency correlations, this project first must collect the data needed in order to perform my analysis. Majority of this data will come from a financial application called "FactSet". This application will provide different interest rates and the different spot prices for the currencies over the twenty year span at daily, monthly and yearly frequencies. This project will be collecting this information to analyze it by daily, monthly and yearly intervals. Currencies that this project will be working with include: United States dollar, Canadian dollar, European Euro, Japanese Yen, Swiss Franc and the British pound. Other currencies that may be added over the course of this Capstone may be the Chinese Yuan, Australian dollar, Brazilian Real, Turkish Lira, Saudi Riyal, Swedish Krona and the Russian Ruble. These currencies are subjective due to the fact that extensive research must be taken to be sure the currency and interest rates are accurate. Also there must be enough historical data on these currencies in order to compare with another country's currency.

The Fama Model would be the most effective way to determine the correlations between different currencies because it combines a significant amount of data in the models, which will allow me to make a concrete conclusion to determine if my hypotheses are true or false. My analysis is different from previous research with the focus on globalization and how the removal of capital controls impact the value of a countries currency compared to other country's currencies. Previous literature and analysis represents a different era of tighter cross country controls. Now capital controls are removed. I hypothesize that currency movements are more important due to increases in globalization, which will cause the research results to be more significant.

INTRODUCTION

Today's economy is constantly obsessed with the latest and greatest technology as well as what the next fad is going to be. You never know what the next one is going to be or what corner of the globe it is going to come from. But have you ever wondered why when you order something from another country sometimes it is less expensive than in your country? Or when you travel and you exchange $500 and receive 10,000 of the country's currency you are in? This all has to do with the trade and value of currencies in different countries. Currencies are one of the driving factors behind the price fluctuation in a product outside of the supply and demand theory.

This literature review is going to examine the topic of "International Currency Correlations". People in today's economy may not realize it, but currencies play a crucial role in our financial and economic systems. Any good or service that an external third party provides for someone in another country, has to be dealt with in another currency. Most of the time everything is from another country. Coffee for instance is most likely from South America and the mug from China. Recently, the Financial Times published an article blaming Brexit for a currency shift which caused a rise in the cost of Apple's products in the United Kingdom. An Apple spokesperson said "Apple suggests product prices internationally on the basis of several factors, including currency exchange rates, local import laws, business practices, taxes, and the cost of doing business. These factors vary from region to region and over time, such that international prices are not always comparable to US suggested retail prices" (Fedor).

This topic is very relevant in today's societies and has an impact on everyone around the world due to the fact that the prices of goods are constantly shifting. The research that will be provided in this review will be useful for financial and economic scholars because it will allow them to look at the correlations between different countries' currencies. The reason behind this is currencies have an effect on the financial markets. On another hand, currencies also have an impact on economies around the world.

Over the years different economists and financial professionals have conducted different studies to figure out the correlations between different currencies. Most notably in 1984 Eugene Fama created the forward premium puzzle to help determine the correlations of

different currencies. How this project will stand apart from his, is the time period. Eugene Fama conducted his study in 1984. At that time markets weren't as apt to buy and sell too much foreign currency. In today's economies, countries are constantly interacting with other countries' economies. Today's society is much more globalized than it was in 1984. Globalization is "the development of an increasingly integrated global economy marked especially by free trade, free flow of capital, and the tapping of cheaper foreign labor markets" (Merriam-Webster). Furthermore, there is much more information on currencies and this study is going to see if correlations still exist today. I'm personally interested in this topic because I am an International Business major and love to travel. Also, I have always been interested in why when the value of some currencies are going up what other currencies are going down.

The literature review will be a combination of applying the Fama Model to look at the forward premium anomaly, and how the model is used. The literature review will also be looking at some history of currencies and interpretations to different models.

Background/History

Currency has always played a vital role in our economy. Ever since the beginning of time people have traded one commodity for another. Early on it was a barter and trade system where people would barter items based on the perceived value to that individual. For instance, two chickens may be worth a hammer to one person and to another it may only be worth a feather. Later, a form of coin currency was established. The first known form of currency came "around the 7th millennium BC in western and central Asia, societies developed a means of trade centered on that region's rich mineral deposits, extracting metals such as gold, copper and tin. By the 3rd millennium BC, the use of gold bars with standardized weights and value was common in cities in Egypt and Mesopotamia" (FXCM). This was the beginning of the use of currency and from this, the different currencies that we know today evolved.

In 1944, World War two had just ended and the heads of 44 different countries came to the United States to develop a better monetary system. This was known as the Bretton Woods conference, because it was held in Bretton Woods New Hampshire. The countries came together to figure out what to base the currencies of the globe off of. This would give

the currencies more stability. From a broad perspective, this was the first time correlation between currencies was ever going to exist.

Before the Bretton woods conference the United States dollar was backed by gold. What this meant was that for every dollar that was in circulation, there was an equivalence of that dollar in gold. This was significant because the dollar was actually backed by something important and valuable to the society. Looking back to the Bretton Woods Conference, since the United States dollar was backed by gold, countries knew it was now stable and didn't have too many fluctuations. The countries decided to then have their currencies backed by the United States dollar. This meant that people of other countries could buy United States dollars and then exchange those dollars for gold which was the most valuable element at the time. "In July 1945, congress passed the Bretton Woods Agreement Act, authorizing U.S entry into the International monetary fund (IMF) and International Bank for Reconstruction and Development (IBRD)" (Bretton Woods Conference). Since the currencies of 44 nations were backed by the United States dollar, they all had a direct correlation. When the value of gold went up, the value of the dollar went up and the rest of the currencies went up along with it. This all lasted till "August 1971 (when President Richard Nixon suspended the dollars convertibility into gold) and February/March 1973 did floating exchange rates become the norm for the currencies of the major industrialized nations" (Bretton Woods conference). This now meant that all of the currencies once part of the Bretton Woods conference were no longer back by gold but faith Some decided to base the value of their currency off of another nation. The United States was also no longer backed by the "gold standard". Through all this the IMF still remained intact. According to the IMF "Many feared that the collapse of the Bretton Woods system would bring the period of rapid growth to an end. In fact, the transition to floating exchange rates was relatively smooth, and it was certainly timely: flexible exchange rates made it easier for economies to adjust to more expensive oil, when the price suddenly started going up in October 1973. Floating rates have facilitated adjustments to external shocks ever since" (IMF).

The Bretton Woods conference worked for a few years, but as the value of gold increased, the United States couldn't keep up with increasing or decreasing the money supply in circulation. This shows the first instance of what it was like to have a standardized

currency. Today's currencies for the most part are based off of the economic activity of that nation. This takes into account the money supply, interest rates, inflations and the supply and demand of currency to determine its value.

Another historical event happened regarding currency collapse was the 1994 Mexican peso crisis. Although researchers are unsure about what the primary cause of the collapse was, there were some that say it wasn't just one factor that caused the collapse, but it was the combination of several different factors. "Some commentators have stressed the role of loose fiscal policies and growing real appreciation, others have emphasized the role of political instability and external factors , such as the increase of interest rates in the United States" (AGÉNOR,Masson). What we can learn from the crisis is that some currencies are dependent on the decisions of other countries. This is why when one country is going through a difficult time such has a war, financial crisis or even with change in leadership. Countries' currencies have more volatility during these times which effects the flow of exports and imports of a country.

In recent years a term that has come about is "Globalization". Today's society has many free trade zones. These allow for the free flow of goods from one country to another without tariffs. Countries use these to help get the goods they need. With globalization we see customs and cultures in one country present in another. This is because people for the most part can now get all of the native goods from their home country, in another country. Also countries for the most part now are more accepting of outside cultures. Globalization in this project is defined as the purchasing of financial elements from another country to help increase the value of the home country's currency.

Increases in globalized trade brings many positives and negatives with it. Some of the positive attributes include: spreading the ideas, cultures and customs of one country to the other; building a unified world for us to live in; creating a better understanding of the problems and difficulties a country/culture may be experiencing; sharing new technologies on a global level; and allowing for easier trade between nations. Negatives include: creating competition between nations and is a standard of living which people may strive to reach for, but can't because of their economic backgrounds.

Previous Research

One of the leading researchers known for his empirical analysis of assets prices is Eugene F. Fama. Fama is from Boson Massachusetts where he studied at Tufts university and then later at the University of Chicago. Fama received a Nobel Prize for his work in demonstrating "…that stock price movements are impossible to predict in the short-term and that new information affects prices almost immediately, which means that the market is efficient"(Nobel Prize). His work can also be applied to other areas of finance, such as currency trading. This project will be looking at his work on forward and spot exchange rates to help determine the correlation between different countries' currencies.

The Forward Premium puzzle has three different names. It goes by the Forward Premium Puzzle, The Forward Premium Anomaly and the Fama Modal. They all state that in the future that "high interest rate currencies tend to appreciate relative to low interest rate currencies"(NBER). If a countries interest rates are greater than that of another country, then that countries currency should raise in value. As demand for currency increases then the value of the currency also increases.

Uncovered interest rate parity (UIP) is a parity condition stating that the "difference in interest rates between two countries is equal to the expected change in exchange rates between the countries' currencies" (Investopedia). The key is that the country with the higher interest rate, will cause currency to appreciate where interest rates are higher.

Reviews

The Forward Premium Puzzle is used to show that future foreign exchange rates may be predictors of future spot rates. This model is named the Fame model. This model helps show the correlations between currencies. Fama (1984) states: "There is general consensus that forward rates have little if any power to forecast changes in spot rates. There is less consensus on the existence of time varying premiums in forward rates".Fama conducted the study by collecting data from August 31, 1973- December 10th, 1982.With Fama's research there are a few variables that have the possibility to throw off calculations. These include 1) "An inefficient foreign exchange market" 2) "Government intervention in the spot exchange market", 3) The "Doomsday theory" and 4) "Stochastic Deviations from purchasing power parity" (p. 334-336). All of these external factors have the possibility to throw off the model.

Backus (1995) argues that spot exchange rates are increasing, the premiums of forward rates over spot rates are decreasing. Backus' however, was to "describe the properties a theory must have to reproduce the puzzling inverse relation between rates of depreciation and forward premiums and constructed a numerical example that has them" (P. S111).

Inci (2016) argues that the uncovered interest rate parity models and Affine models are better than those used in Backus. Inci says "However, our model still fails to outperform the random-walk model of exchange rates by the Schwarz Information Criterion. Thus, the current model is unlikely to add value to exchange rate forecasting" (p. 1622). Inci's models are better because "the Schwarz Information Criterion values of our 3-factor and 5-factor models are lower than those of uncovered interest parity and Backus et al. (2001), indicating better empirical performance in fitting the exchange rates. However, they are still higher than those of the random walk model" (p. 1621)

In addition to examining the forward premium anomaly. Chinn (2010) argues that "the forward rate should equal the future expected spot exchange rate; yet when the forward rate suggests depreciation, typically the exchange rate appreciated, and vice versa" (Chinn). This is an interesting perspective to have. What Chinn found was that "the combination of multiple costs or rigidities appears to be a fruitful approach for explaining why the forward discount typically points in the wrong direction for the ex post exchange rate change"(pg. 6)

Burnside (2007) on the other hand has a different approach when looking at the Forward Premium Puzzle. Burnside states that "high interest rate currencies tend to appreciate relative to low interest rate currencies". They look at the impact interest rates have on the forward premium puzzle. They also take into account different macroeconomic approaches such as treasury bills and the impact they have on the model.

Foreign exchange markets are a critical component to a more global economy that is constantly becoming more globalized. Thus, it is important to understand short run exchange rate behavior. Dooly (1976) talks about the possible impact on the currency variability may have on "price dynamics". He also discusses how "the international monetary system has been subjected to frequent, severe shocks" (Pg.2). He argues that these shocks have caused future rates to be impacted and fluctuate. He does believe in the efficient market hypothesis. With that said he believes that the foreign exchange market is "efficient" (Pg. 6). Kellard

(2016) also believes that in an efficient market, the expected returns should be zero. Kellard also found that "the extant foreign exchange literature has reported evidence of long memory behavior in the forward premium of several currencies"(Pg. 727).

Bekaert (1996) brings up a few points that go against my hypothesis. "First, the forward rate is not an unbiased predictor of the future spot rates. Second, exchange rate changes are highly variable and nearly uncorrelated. Third, forward premiums, which predict exchange rate changes are less variable and are highly persistent. Fourth, exchange rates display substantial serial dependence in their second moments" (Bekaert).

Hodrick (2002) looked to "test whether multi-country models add to our understanding of the dynamics of exchange rates and short-term interest rates beyond what is already known from two- and single-country models, respectively" (Pg. 1298). This is important because it takes into account "third country factors" (Pg. 1299) to understand the movement of exchange rates.

When looking at recent articles most of them have been written over 20 years ago. One article that has been written recently is *Forward and Spot Exchange Rates in a Multi-Currency world*. This article looks at cross currency anomalies to determine if they are empirically distinct. Hassen found that there is empirical evidence that makes these anomaly distinct. He also shows a link to the forward premium puzzle. Since it is a recent study it looks at the impacts globalizations also has on cross currency.

Conclusion

In the end the literature supports this project hypothesis: One, is there a correlation between certain currencies with respect to their movements; and is the correlation positive or negative? Two, Does the Fama model still hold true? Although there are some articles that refute my hypothesis, other support the idea that currency correlations still exist today. Trade has played a critical role in helping to keep the correlations alive. Before the world became such a global community, currencies were based directly off of each other. An example of this is the Bretton Woods convention. All the 44 currencies at the convention were based off of the United States dollar. Today, only a few currencies are based off of each other still.

Through this literature it has helped me shape my methodologies even more. I have been able to look at other studies and adjust my methodologies accordingly. Most of the articles that I have researched have looked at the Forward Premium Puzzle. Most researchers use different factors such as interest rates and spot exchange rates to help determine what the most accurate way to determine the forward rate is. Most of the articles also only looked at 6-9 currencies. This project will look at close to 16 currencies, depending on the amount of data that is able to be collected. The data will be collected for the past 20 years in different intervals. The reason I chose 20 years was most of the previous studies end during the mid-90's (Backus, Inci, Fama Chinn). This study will look at the recent correlations between currencies

This literature is important to help shape my view points and my methodologies during this project. This literature can be applied in the future of this project when it comes time to analyze the data. Once I receive my data, I will be able to compare my analysis to those of other researchers. It will also help if I have any questions when doing my analysis. The reason for this is that other researchers probably addressed some of the same issues that I will face.

One of the most significant discoveries made while conducting my literature review is the overall usage of the Fama model. I had no idea that one formula can be adapted for several different usages.

POTENTIAL RESEARCH ISSUES & ETHICAL CONSIDERATIONS

Over the course of this capstone, there are a few potential problems that can occur. The first is when collecting the data needed for analysis, some countries may not have twenty years of data for me to collect for analysis. Although this is an issue, it would only have minor setbacks. My recovery strategy if this occurs, is to compare the data to the same amount of data that I have on another currency. This would allow for accurate calculations when computing my analysis. Another issue that may present its self is the legitimacy and the reliability of the countries interest rates data. This can pose an issue with currencies that have a corrupt government. When doing my preliminary research on the currencies, if I find that information may be inaccurate, I will remove that currency from the analysis due to its ability to throw off the rest of data when performing the different regression analyses.

In terms of ethical issues, I do not plan on having any ethical issues over the course of this project. If any issues are presented, I will contact my advisor to discuss the best possible method of dealing with these issues and proceeding with the project. If further assistance is needed, I will reach out to Dr. Segovis, who is the director of the Honors Program here at Bryant University.

OVERVIEW

This honors capstone of "International Currency Correlation" is broken down into two parts. Part one of the project looks in depth at the Fama Model to determine if the models factors still hold true to this day. The second part of the project is to look at correlation between different currencies around the world. This will tell us the strength and significance of the correlation over the past twenty years. The main target audience for this report is individuals looking to learn more about currency correlation. This report discusses the models and factors in simplistic condition at first so the reader will be able to fully understand and comprehend the purpose of the model before going into the more complex results.

PART 1: FAMA-FRENCH MODEL

Definitions

In the financial world there are many different models called "Factor Models" that assist us in comping up with asset pricing. Some of the most well-known models are the Capital asset Pricing Model (CAPM), CARHART Model and the Fama-French Model. All three of the models use some of the same factors while others are more complex adding more factors into the formula to determine the value of a portfolio.

CAPM

The capital asset pricing model (CAPM) "describes the relationship between systematic risk and expected returns for assets" (Investopedia 2017). This model is primarily used in the pricing of securities. It also helps to calculate the amount of risk that the investment is going to have. The model is comprised of several factors. The factors that the model takes into account is: $r_{f,}$, the risk free rate; $\beta_{a,}$ which is the beta of the security and r_m which is the expected market return. The risk free rate can be found on any financial website that has historical data for government bond rates. Beta is calculated by taking the covariance of the stock return and the market return, divided by the variance of the market return. The Formula for CAPM is shown below.

$$r_a = r_f + \beta_a(r_m - r_f)$$

The researches credited with the discovery of the CAPM Model are Markowitz, Sharpe, Linter and Mossin.

Fama-French and Fama Model

The Fama-French Models is superior to the CAPM Model is several ways. This model takes into account three factors instead of two. However for this project there may be some confusion as to what model is being used. This project will be using the "Fama Model" not the "Fama-French Model". The Fama models is superior at looking at currencies where as the "Fama-French Model" is for stock valuation. The factors that the "Fama Model" takes into account are: "F_t-S_t" which is the currency movement; "α" which is the unexplained position of the currency; and "(r_d-r_f)" which is the interest rate difference. "β" is what the equilibrium should be between the two currencies and interest rates. The complete model is formulated as followed.

$$f_t - s_t = \alpha + \beta(r_d - r_f)$$

With these added variables in the formula, it allows us to take more into account with the hope of reducing error by taking into account more market factors. When interpreting this formula, high interest rate currencies are expected to lose value, but in reality it is going to gain value. The reason behind this is, as the interest rates decline the value of the currency is increasing, which will bring the currency to equilibrium. As mentioned in Menzie Chinn 2007 "there are several reasons why the forward premium puzzle might exist, even when capital is perfectly mobile according to covered interest parity criterion: (1) the invalidity of the rational expectations hypothesis; (2) issues of econometric implementation ; and (3) the existence of exchange rate risk premium"(Chinn, 2007).

CARHART Model

Carhart expanded the Fama-French 3-factor model into a 4 factor model by including momentum as an additional factor. Momentum is how likely the stock, currency or commodity is likely to move. This means that a stock price that has been increasing is going to continue to increase, whereas a stock with a decreasing price is going to continue to decrease.

Uncovered interest Parity

Uncovered interest rate parity "is a parity condition stating that the difference in interest rates between two countries is equal to the expected change in exchange rates between the countries' currencies. If this parity does not exist, there is an opportunity to make a risk-free profit using arbitrage techniques" (Investopedia). This is the reason why when interest rates decrease the value of the currency is increasing. If the value of the currency wasn't made up for in interest rates, then investors can take advantage of arbitrage opportunities. In layman's terms, arbitrage is the "risk free" profit. How this works is say one currency and interest rates are priced inaccurately or out of equilibrium. Investors know that these currencies or stocks must move back into equilibrium, so then can invest if the commodity is underpriced and sell when the price rises or they can short the commodity and gain a profit when the price decreases back to equilibrium. Everyday there are arbitrage opportunities, but they are corrected within seconds of finding. Large banks and investment firms have the technology to take advantage of these opportunities in order to grow their portfolios with little or no risk associated with the investment.

This capstone decided to use the Fama model when determining the relationship between currencies and to determine if the model still holds true with increases of globalization. The reason for this is because the Fama model isn't the most complex model or the least complex. It takes into account the variables that are necessary for this project. Fama published this research in 1984. Since then the markets have changed significantly. This capstone wanted to determine if the Fama model can still be used to accurately predict if the value of currencies.

Rule of Equilibrium

The rule of equilibrium states that high interest rate currencies will cause the value of the currency associated with it to decrease. The interest rates are high in a country it is usually compensating for the low currency value. This also works in the reverse. If the currency has a high value, it will cause the interest rates to decrease. This is to keep everything in balance and keeps the currency from becoming overvalued.

Methodology

Data Collection

The first step was to collect the data needed in order to run the regressions needed. The data needed was currency price data for the last twenty years for all twelve currencies on frequencies of daily, weekly and monthly. Other data needed was government yield rates. These rates were also on Factset. This project looked at three month and five year government yields on the frequencies of daily, weekly and monthly.

Once all this data was collected, it was time to organize and clean the data. When collecting the government yield rates, there was some days where the data wasn't recorded. In order to complete the data, the average from the previous day and the next day was taken in order to fill the gaps in the data.

Before the regressions could be run, certain calculations had to be performed. Each was put into direct quotes by taking the quotient of one divided by the currency. Next, the return of the currency had to be calculated. This was done by taking the natural logarithm of the most recent data point minus the preceding natural logarithm of the previous data point. The last calculation was the difference of the government yield rates. The foreign currency rates were subtracted from the United States rates in order to calculate the difference of the two currencies. All of these calculations were performed for short term rates of three month and long term rates of five years on a daily, weekly and monthly frequencies.

Regressions

Now that all of the calculations have been performed and the data has been cleaned and organized, the regressions can be run. For each of the twelve currencies six regressions were performed. First regressions were performed on the entire data set, then the data was split in half and regressions were run on each half of the data. All three of these regression were performed on the long-term and short-term rates.

The critical values that determine if the Fama-French model still hold true is the T-Stat in the regressions. In order for equilibrium to still be true β should be statically 1. This means that β should be positive (+) and statically significant with a T-Stat >1.96. The reason the T-Stat has to be greater than 1.96 is because when looking at a T-Table the observations only go

up 30 before you have to use the ∞ statistics for margin of error. 1.96 gives us a 2.5% margin of error. If the currency returns is negative (-), then that means that the currency is depreciating and losing value. An example of the regression is below in **Table 1.**

The reason for this is according to rational expectation or equilibrium theory. High interest rate currencies are supposed to lose value. This is why interest rates are so high. The rates are compensating or the value of the currency. This means that β equals 1 in the regressions. Lets take a look at **Table 1** below. In this figure the United States dollar three month daily interest rate is 0.27 on 09/28/2016 and the Canadian dollar three month daily interest rate is 0.52. Since the Canadian Dollar has a higher interest rate, the value of its currency is supposed to lose value according to the equilibrium theory. Since the T-Stat is less than 1.96 which makes its statically negative. So, in reality high interest rate currencies actually gain value. This is the called the forward premium puzzle anomaly.

Table 1

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.02982385
R Square	0.000889462
Adjusted R Square	-0.000590702
Standard Error	0.005423319
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.76745E-05	1.76745E-05	0.600921378	0.438498172
Residual	675	0.01985336	2.94124E-05		
Total	676	0.019871034			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	6.41729E-05	0.000458516	0.139957683	0.888735176	-0.000836117	0.000964463	-0.000836117	0.000964463
X Variable 1	0.056371206	0.0727191	0.775191188	0.438498172	-0.086411632	0.199154043	-0.086411632	0.199154043

The T-Stat (highlighted in yellow) that tells us the significance is the X Variable which is also the rDifference. The green highlight is the currency this regression is for. What you can infer from this is that the

Results

As mentioned before in the methodology section the regressions were broken down into several different categories. These categories were short term rates (3 Month) and long

term rates (5 year). After the rates were collected on different frequencies. These frequencies were daily, weekly and monthly.

Three Month Daily

After running the regressions for the three month daily frequency. The results showed a clear result to the data for the past twenty years. The majority of the regressions showed that the theory of equilibrium still holds true. However, there are a few cases where the t-stat is greater than the 1.96. In order to determine if this has always been the case, the regressions were re-run with the data set split in two. The two data sets were now the "early" set of data and the "later" set of data. In the later set of data, the Brazilian Real had a t-stat of 2.043. When analyzing the early set of data, the Turkish Lyra had a t-stat of -2.243. Since the Turkish Liras coefficient was negative, it doesn't follow the rules of the Forward Premium Puzzle. The Forward Premium Puzzle states that the coefficient must be positive in order to hold true. These results were interesting because either the early or later data was significant, but when combined weren't significant and the Forward Premium Anomaly didn't hold true. Since there wasn't much success with the entire data set, the main focus after this was on some of the major currencies when looking at the weekly and monthly frequencies.

What this means for the three month daily interest rates is that the value of these currencies with the t-stat that is greater than 1.96, is that as the differential between the price of the currency and the countries interest rates increases, the value of the currency is expected to increase over time. In the case of the Turkish Lira, the currency had a negative t-stat which means that the Forward Premium Puzzle doesn't hold true and the currency is going to follow the rule of equilibrium. As for the Brazilian Real, the t-stat is greater than 1.96 meaning that the Forward Premium Puzzle holds true and that as interest rates increase in Brazil so will the value of the currency. **(Below are the TRY and BRL regressions for three month daily)**

TRY (Early) SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.121312
R Square	0.014717
Adjusted R	0.011793
Standard E	0.006756
Observatic	339

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	0.00023	0.00023	5.033576	0.02551
Residual	337	0.015383	4.56E-05		
Total	338	0.015613			

	Coefficients	*tandard Erı*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	-0.00752	0.003223	-2.33213	0.020283	-0.01386	-0.00118	-0.01386	-0.00118
X Variable	-0.07877	0.03511	-2.24356	0.02551	-0.14784	-0.00971	-0.14784	-0.00971

BRL (Later) SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.110803
R Square	0.012277
Adjusted R	0.009338
Standard E	0.012526
Observatic	338

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	0.000655	0.000655	4.176419	0.04177
Residual	336	0.052716	0.000157		
Total	337	0.053371			

	Coefficients	*tandard Erı*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	0.023102	0.011444	2.018658	0.044317	0.000591	0.045614	0.000591	0.045614
X Variable	0.163521	0.080015	2.043629	0.04177	0.006128	0.320914	0.006128	0.320914

Five Year Daily

When analyzing the five year daily regressions, two regressions stood out. These were the currencies with some of the most risk associated with country. They are also part of the BRICS (Brazil, Russia, India, China and South Korea). The two that stood out was Russia and China. The Russian Ruble (RUB) regression of the entire dataset, had a t-stat of 2.508. China on the other hand had a t-stat of 2.809. Both of these regressions can be found below. The Chinese Yuan (CNY) is negative, which means that the Forward Premium Puzzle doesn't hold true with the currency.

These Russian Ruble regression is unlike any of the three month daily regressions. The regression on the entire data set was greater than the 1.96. The unique aspect of theses is that when you split the data set in half for the RUB, it follows the properties of Equilibrium, but when you run the regressions with the entire data set they follow the rule of Forward Premium Puzzle. The reasoning behind this is because they are BRICS nations, which means that they are up and coming nations. The nation's economic prosperity is starting to gain momentum and growing. This is all due to globalization. **(Below are the RUB and CNY regressions for five year daily)**

RUB (Entire) SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.075982
R Square	0.005773
Adjusted R	0.004856
Standard E	0.018531
Observatic	1086

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	0.002162	0.002162	6.294642	0.012255
Residual	1084	0.372252	0.000343		
Total	1085	0.374413			

	Coefficients	*tandard Erı*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	0.006547	0.002967	2.206531	0.027556	0.000725	0.012368	0.000725	0.012368
rDIFF	0.106742	0.042545	2.508913	0.012255	0.023262	0.190223	0.023262	0.190223

CNY (Entire) SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.085026
R Square	0.007229
Adjusted R	0.006314
Standard E	0.001332
Observatic	1086

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	1.4E-05	1.4E-05	7.89371	0.00505
Residual	1084	0.001923	1.77E-06		
Total	1085	0.001937			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	-0.00052	0.00018	-2.87803	0.00408	-0.00087	-0.00017	-0.00087	-0.00017
rDIFF	-0.02244	0.007988	-2.80957	0.00505	-0.03812	-0.00677	-0.03812	-0.00677

Since the results from the daily frequency weren't what was expected. The project shifted to focusing on some of the larger currencies in the world. The three currencies that part one of this project will focus on from here on are the Canadian dollar (CAD), British pound (GBP) and Swiss franc (CHF). After running the regressions for five year weekly, three month weekly and five year monthly, no t-states were greater than the 1.96 when the regressions were run for the entire data set and when the data set was split in two. This means that all of them will follow the rule of equilibrium.

Three Month Monthly

The regressions for three month monthly did have some cases where the Forward Premium Puzzle still held true. The only currency to hold true to the Forward Premium Puzzle, was the Canadian Dollar. When the regressions were run for the "entire" data set, the Canadian Dollar had a t-stat of 2.974. However, when the data set was split into two parts (Recent and Early), the early data set had a t-stat of 2.729 and the recent had a t-stat of 0.025. This shows that over the course of the past years the currency has shifted from Forward Premium Puzzle to the rule of equilibrium. (**Below are the regressions for CAD three Month Monthly)**

CAD (Entire) SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.270581
R Square	0.073214
Adjusted R	0.064939
Standard E	0.030296
Observatic	114

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	0.008121	0.008121	8.847758	0.003595
Residual	112	0.102796	0.000918		
Total	113	0.110917			

	Coefficients	*tandard Erı*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	0.010761	0.004863	2.212878	0.028934	0.001126	0.020396	0.001126	0.020396
rDIFF	1.953286	0.656673	2.974518	0.003595	0.652172	3.254399	0.652172	3.254399

CAD (Early) SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.339945
R Square	0.115563
Adjusted R	0.100046
Standard E	0.033877
Observatic	59

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	0.008547	0.008547	7.447742	0.008432
Residual	57	0.065416	0.001148		
Total	58	0.073963			

	Coefficients	*tandard Erı*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	0.014232	0.006121	2.325205	0.023644	0.001975	0.026489	0.001975	0.026489
X Variable	2.310746	0.84672	2.729055	0.008432	0.615218	4.006274	0.615218	4.006274

Conclusion

In conclusion, there are still some instances of the Forward Premium Anomaly. We see this Anomaly in several regressions. It exists in the three month daily regression of the Brazilian real later regression. It also exists in the Russian rubble entire data set regression for the five year daily regression. The third instance where the Forward Premium Anomaly is present is in the three month monthly regression for the entire data set for the Canadian dollar and the early data set for the Canadian dollar. This was particular interesting, because majority of the currency according to other researchers found that the Forward Premium Anomaly should be present in many currencies.

One of the major lessons that can be taken away from this portion of the project is to never underestimate some of the currency movements. Always run models to see if the Forward Premium Anomaly exists. If it does, then you can better determine the currency movement and there for increase your portfolio size. If you know which direction the currency is going to move, it is like an arbitrage situation. In this part of the project my hypothesis failed because I believed that there would be more instances of the Forward Premium Anomaly. Please reference the appendix of this report for additional information.

PART 2: CORRELATION

Overview

Part two of this project is going to focus on the relationships between currencies. This portion of the project utilizes currency data to determine if certain currencies move in conjunction with each other. This will all be done through the utilization of correlation tables.

Definitions

Correlation

According to the dictionary correlation is “the degree to which two or more attributes or measurements on the same group of elements show a tendency to vary together” (Unabridged 2017). The correlation of items can be tracked for just about anything. The correlation can only be determined if the correlation is between items of the caliber. When a correlation table is made you receive a table of numbers. All of the numbers are between one and negative one. The numbers that are closest to one, mean that the items are more correlated. The numbers that are close to negative one, are negatively correlated. Numbers that are close to zero have no correlation associated with them.

Dynamic Correlation

Dynamic correlation shows the movement of currencies over time with relations to other currencies. Dynamic correlation of currencies is normally plotted on a line graph to show the increases and decreases of the correlation between currencies over time.

Direct Quotes

Direct quotes “is a foreign exchange rate quotes as the domestic currency per unit of foreign currency” (Investopedia). All of the quotes in this section of the project are in direct quotes. The direct quote of the currency can be found by taking one over the currency. This would show how much one unit of foreign currency is in United States dollars. This allows the currencies to be compared on the same level as the rest.

Methodologies

Much like the first part of the project, all of the currency information was taken from Factset database. The data was gathered for twelve difference currencies. These currencies

were the Canadian dollar (CAD), Japanese yen (YEN) , Swiss franc (CHF), British pound (GBP), Honk Kong dollar (HKD), Chinese yuan (CNY), Brazilian real (BRL) , Turkish lyra (TRY), Saudi real (SAR), Swedish krona (SEK), Russian ruble (RUB) and the euro (EUR). The currency information was collected for twenty years 9/28/2016-9/27/1996. The data was also collected on the frequencies of daily, weekly and monthly.

Not all currency information was complete. Some days, weeks or months in the data sets were missing. In order to fill these gaps, the average of the data point below and after the gap was taken to come up with a plausible number to fill the gap. Some currency data only went back to a certain time period. These correlation tables were run where the first currency stopped being recorded. Other regressions excluded these currencies so the correlation could go back further. All correlation tables are marked with the time period associated with the table.

Once the data was cleaned, it was then put into correlation tables. All the tables were run in excel. Each of the frequencies had six correlation tables in total. Those were the entire data set based off price. Then the data set was split into two, to see if the correlation has changed over time. These correlations were run on the direct quote price information and the price change information. When the correlation of one currency is run against itself, it had a correlation of one. You can observe this on the diagonal axis. **(Below is an example of a correlation table)**

Daily Correlation (Price)

	CAD	*YEN*	*CHF*	*GBP*	*HKD*	*CNY*	*BRL*	*TRY*	*SAR*	*SEK*	*RUB*	*EUR*
CAD	1											
YEN	0.720117	1										
CHF	0.808798	0.663373	1									
GBP	0.345188	-0.11544	0.031058	1								
HKD	0.112088	0.103199	0.278574	-0.20196	1							
CNY	0.712262	0.613102	0.923826	-0.21409	0.310045	1						
BRL	0.011801	-0.00029	-0.19415	0.114398	0.381469	-0.21164	1					
TRY	-0.34946	-0.30334	-0.39116	0.00275	0.405113	-0.415	0.815772	1				
SAR	0.154785	0.026889	0.011874	0.228018	-0.07405	-0.04145	0.01485	-0.04101	1			
SEK	0.848864	0.543321	0.69402	0.580749	0.182446	0.497231	0.235299	-0.02925	0.148827	1		
RUB	-0.25718	-0.2995	-0.34969	0.081937	0.381791	-0.38371	0.839874	0.917465	-0.02198	0.038927	1	
EUR	0.853704	0.525348	0.702348	0.569461	0.189585	0.519463	0.160337	-0.1532	0.130021	0.918467	-0.04044	1

Once all the correlation were run, the significance of correlation test then began. In order to determine if the currency correlation tables are significant, regression were run to determine the amount of error within each correlation. In order to determine the significance from this the t-stat had to be greater than 1.96 or less than -1.96. T-Stats that are 1.96 and

-1.96 have a 5% margin of error. This is very low for correlations. Any number larger than this has a smaller margin of error. To double check the regression the formula below was also used to determine the t-stat.

$$T = r\sqrt{\frac{n-2}{1-r^2}}$$

T = T-Stat

N = Number of currencies

r = Correlation Coefficient

One last test that was run was dynamic correlation. The Dynamic correlation test, signifies the change in correlation of currencies over time. This was done by plotting several currencies correlation movements over time.

Results

Daily Correlation (Price)

The first data correlation was on the "Price" information. The top five strongest correlation in this data set are between CNY/CHF at 0.9238, EUR/SEK at 0.9184, RUB/TRY at 0.9174, EUR/CAD at 0.8537 and SEK/CAD at 0.8488. These correlations are highly correlated, but these numbers mean nothing until we know the significance of them. It turns out that the t-stat for these top five correlations are all significant.

The five currencies that are highly negatively correlated are the TRY/CNY at -0.4150, TRY/CHF at -0.3911, RUB/CNY at -0.3837, RUB/CHF at -0.3496 and TRY/CAD at -0.3494. Although these currencies aren't that close to negative 1 they still have some negative movement with respect to the other. All of these correlations are also significant.

When analyzing the significance results, there are only a few that aren't significant. Those are the relationships between CAD/BRL, YEN/BRL, YEN/SAR, CHF/SAR, GBP/TRY, BRL/SAR and SAR/RUB. It also turns out that in the daily correlation table these

correlations are closest to zero. With both of these pieces of information we can see that these currencies have nothing in common.

The interesting aspect of the daily price correlations in the entire data set, and the data set split into two groups (recent and early) is that the top and bottom correlations change as the time changed. In the recent correlation table the top five correlations are the RUB/TRY, BRL/CAD, RUB/BRL, SEK/CAD and the EUR/RUB. Where as in the early data set the top five correlations are the EUR/SEK, EUR/GBP, GBP/CHF, EUR/CHF and RUB/TRY. There are several reasons behind this. First is globalization. In the last ten years the world has become much more connected and information is accessible at your fingertips. Another interesting observation is that in the early data set, the correlations are stronger between the countries that are closest to each other. In the recent data set the distance between countries doesn't seem to play such a large role in the correlations. **(Please reference the appendix for complete correlation tables on price information)**

Daily (Price Change)

When analyzing the daily "Price Change" correlations, the top five currencies that have the highest correlations are the EUR/SEK at 0.7969, EUR/CHF at 0.7492, SEK/CHF at 0.6326, EUR/GBP at 0.6177 and SEK/GBP at 0.5786. The interesting aspect to all of these highly correlated currencies is that they are all located within the same geographical region. This shows that the major currencies in a region have a tendency to move together.

On the other hand, the bottom five correlations in the data set are SAR/YEN at -0.00967, SAR/CHF at -0.00976, TRY/YEN at -0.0525, BRL/YEN at -0.0589 and RUB/YEN at -0.07134. As you can see the correlation of these are negative. These correlations however, don't have as strong negative correlation as the "Price" correlations do.

In terms of significance, all of the positive correlations are significant. However three of the bottom five correlations are not significant. The two that aren't significant are the SAR/CHF at 0.8576, YEN/SAR at 1.942 and BRL/YEN at -0.0213. In order to be significant, these numbers had to be greater than 1.96. Since these correlations weren't highly negatively correlated and closer to zero they still could be used to diversify a portfolio.

If you were to compare this data to the data when it is split into two parts. The EUR/SEK and the EUR CHF are both still the highest correlated currencies. The highest correlated currencies in the recent data set of October 2006 to October 2016 are EUR/SEK at 0.8235, EUR/CHF at 0.6876, EUR/GBP at 0.6145 and TRY/BRL at 0.5863. The interesting correlation here is the Turkish Lyra (TRY) and the Brazilian Real. The reason this is interesting, is these countries are geographically far from each other.

The "Recent" data set has one correlation that is a large enough negative correlation to be mentioned. The negative correlation between the Turkish Lyra and the Japanese Yen is -0.2098. The other high negative correlation is between the Brazilian Real and the Japanese Yen at -0.1631, but it turns out that this correlation isn't significant, meaning that the correlations is actually much lower than what is depicted here.

In the "Early" half of the data set from October 1996 to October 2006 there are high positive correlations with the EUR/CHF at 0.8326, EUR/SEK at 0.7578, SEK/CHF at 0.7575, GBP/CHF at 0.6318 and EUR/GBP at 0.6235. The only difference between this data set and the "Recent" data set is that the TRY/GBP correlation is in the top five. With this data the researcher or investor can see how correlations have changed over time. **(Please reference the appendix for additional information on "Daily Price Change" correlations)**

Weekly (Price)

The top five positive correlations for the "Entire" data set are CNY/CHF at 0.9239, EUR/SEK at0.9189, RUB/TRY at 0.9169, EUR/CAD 0.8545 and SEK/CAD at 0.8496. The intriguing aspect to these correlations is that the geographical distance of the currencies is greater than that of the daily correlations. It's also interesting that as the frequency changes so does the strength of the correlations between countries.

When the data is split into two parts "Recent" October 2006 to October 2016 and "Early" October 1996 to October 2006. The top correlations in the "Recent" part are RUB/TRY at 0.9247, RUB/BRL at 0.8685, SEK/CAD at 0.8660, EUR/RUB at 0.86033, CNY/CHF at 0.8488 and EUR/BRL at 0.8422. When analyzing this there was one correlation that was in the top five but wasn't significant. That one was BRL/CAD at 0.8751. If this correlation was included it would be the second highest correlation.

The "Early" set of data from October 1996 to October 2006 has changed significantly from the "Recent" data set. The top five are the EUR/SEK at 0.9419, EUR/GBP at 0.9316, EUR/CHF at 0.9170, TRY/BRL at 0.9063 and RUB/TRY at 0.9058. With this data you can see how the strength of the correlations have changed over time. This means that the investor must continue to check the strength of correlations before buying the currency. **(Please reference the appendix for additional information on "Price" Correlations)**

Weekly (Price Change)

The weekly price change correlations vary when comparing them to the weekly price correlations. In this case the top five positive correlations are the EUR/SEK at 0.7905, EUR/CHF at 0.7385, SEK/CHF at 0.6151, EUR/GBP at 0.6111 and SEK/GBP at 0.5631. In terms of the negative correlations, there are four that are significant that are negative. YEN/CAD at -0.0031, RUB/ HKD at -0.0105, TRY/YEN at -0.0489 and RUB/YEN at -0.0489. Although these are the largest negative correlations they more than likely will not be used by investors to determine correlations. The reasons behind this is they are closer to zero than negative one. The closer they are to negative one the more likely currencies are to move in opposite directions.

When the data is split into "Recent" and "Early" the top three correlations in each part just vary in the strength of the correlation over the past twenty years, rather than different correlations moving into the top positions. More than likely these currencies are going to move in the same direction as the other based off of the past twenty years of data. **(Please reference the appendix for additional information on "Price Change" Correlations)**

Monthly (Price/Price Change)

The final data set for correlations is the Monthly information. When examining the entire data set the top five positive significant correlation are CNY/CHF at 0.9227, RUB/TRY at 0.9190, EUR/SEK at 0.9186, EUR/CAD at 0.8569 and SEK/CAD at 0.8515. These are some of the strongest correlations that have been presented in the data. There is a high possibility that these currencies are going to move in the same direction as each other.

In terms of the negative correlations there are a few that have a slight possibility of moving in opposite directions. Those are RUB/YEN at -0.3009, TRY/YEN at -0.3021, RUB/CHF at -0.3454, TRY/CAD at -0.3485 and TRY/CHF at -0.3830. One interesting thing

to point out about this data set is that it has the most correlations that aren't significant. Twenty three out of the sixty eight correlation are not significant.

When the data set is split in to two. Analysts will see that the location of the correlations that aren't significant change significantly over the twenty year period. In the early period the top two correlations are EUR/SEK at 0.9388 and EUR/GBP at 0.9319. In the recent period the top two correlations are RUB/TRY at 0.9240 and SEK/CAD at 0.8788.

In the Monthly price change dataset analysts will see almost the exact opposite of the "price" dataset. The top three correlations in each category are almost identical. The only difference is the strength of the correlation over time. There are a few correlations that moved into the top ten that weren't significant. However, when the correlations were done on the entire dataset, these correlations moved out of the top ten and closer to zero.

Conclusion

In the end if an investor were to use this information, he/she has several strategic approaches depending on their goal. If the investor wants to diversify their portfolio, then they would invest in currencies that have a negative or near zero correlation. The thought process behind this is that if one currency is losing value, then the investor doesn't want to lose money on all of their investments.

If the investor has a high risk tolerance then he/she can invest in currencies that have a high positive correlation. This means that if one currency is gaining value so will the currencies that have a positive correlation with that currency. The investor must keep in mind that there are no perfect correlations out there. Although, the higher the correlation, the higher chance a currency has at moving with the correlated currency.

Another important aspect is significance. The investor can run correlation tables and receive some incredible results, but they can mean absolutely nothing as noted in an observation before. The correlation must be statically significant in order for the positive or negative correlation to take place.

PAPER SUMMARY

To summarize, the movement of currencies of the world can be tracked in several different ways. By collecting the interest rate data as well as the value of the currency data, the investor can determine how the currency will move. Over time the currency will either follow the Forward Premium Puzzle or gain value with high interest rates, or the currency will lose value based off of the rule of equilibrium. With both strategies the investor has several options. If the investor expects the currency to increase in value, then they can simply buy the currency in order to make a profit. If the currency is following the rule of equilibrium then the investor may have to short the currency. In order to diversify their position, they may want to invest in some other currencies. This is where correlation comes into play.

The correlation data is just as important as the “Forward Premium Puzzle”. The reason is, correlation tell the investor what other currencies may move in the same or opposite directions as another currency. For instance, say the investor knows that the Euro is going to gain value, but has a high negative correlation with the Canadian dollar. Not only does the investor have a diversified portfolio, but he/she stands to make a profit on both side. They can buy Euros and short the Canadian Dollar. Say the investor wants no correlation between currencies, so his positions aren’t hurt by the movements of other currencies. The investor will then buy currencies that have a correlation closes to zero. This means that they have a very low chance of moving with the other currencies in their portfolio.

If the investor has a strong understanding of currencies, they can then predict the movement of currencies. They can also then determine what will happen to the stock prices in the countries markets. This is why this project is important and can help any investor diversify or gain insight into a new market.

FUTURE PROGRESSION

If this project were to be done again, many changes could be made. Some of the major changes to this project would be to add more currencies to compare and run regressions on. Another way is to increase the time frame for the regressions. Instead of using twenty years of data, the regression can be run on forty years of data. If the project intended to look for accuracy and to pinpoint the exact location of changes between the rates, the regressions can be run on a potential hourly frequency. This information will be difficult to find in bulk, but it is a possibility.

The same changes can be made for correlations. More currencies can be used in the correlations. In additions to this the time frame used can be increased to look more in depth how correlation have changed over time.

SPECIAL THANKS

Over the course of the past two years many long hours have been put into the completion of this project. I would like to thank Professor A. Can Inci for being my faculty advisor for this project. If it wasn't for his knowledge of this topic and excellent teaching skills, I wouldn't have been able to complete this project.

I would also like to thank my editorial reviewer Professor Laurie Bates for proofing my paper and pointing out all of my grammar mistakes.

Lastly, I would like to thank my friends, family and the rest of the honors program staff for all of your support over the past two years.

Thank you again for everything!

Sincerely,

Thomas Griffin

APPENDIX

Regressions Three Month Daily

Entire Data Set 8/31/2016-1/28/2014

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.02982385
R Square	0.000889462
Adjusted R Square	-0.000590702
Standard Error	0.005423319
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.76745E-05	1.76745E-05	0.600921378	0.438498172
Residual	675	0.01985336	2.94124E-05		
Total	676	0.019871034			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	6.41729E-05	0.000458516	0.139957683	0.888735176	-0.000836117	0.000964463	-0.000836117	0.000964463
X Variable 1	0.056371206	0.0727191	0.775191188	0.438498172	-0.086411632	0.199154043	-0.086411632	0.199154043

YEN SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.067178382
R Square	0.004512935
Adjusted R Square	0.003038139
Standard Error	0.005989335
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.00010977	0.00010977	3.060040889	0.080694119
Residual	675	0.02421369	3.58721E-05		
Total	676	0.02432346			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00027941	0.000275584	-1.013885717	0.311000569	-0.000820515	0.000261694	-0.000820515	0.000261694
X Variable 1	0.190761725	0.109050491	1.749297256	0.080694119	-0.023357242	0.404880691	-0.023357242	0.404880691

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.000971628
R Square	9.44061E-07
Adjusted R Square	-0.001480536
Standard Error	0.124374431
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9.85749E-06	9.85749E-06	0.000637241	0.979868087
Residual	675	10.44157443	0.015468999		
Total	676	10.44158428			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00021867	0.005806368	-0.037660394	0.96996959	-0.011619384	0.011182043	-0.011619384	0.011182043
X Variable 1	0.088162361	3.492457952	0.025243643	0.979868087	-6.769225265	6.945549987	-6.769225265	6.945549987

GBP

Regression Statistics	
Multiple R	0.021501023
R Square	0.000462294
Adjusted R Square	-0.001018503
Standard Error	0.006320138
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.24703E-05	1.24703E-05	0.312192773	0.576523024
Residual	675	0.026962293	3.99441E-05		
Total	676	0.026974764			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000705335	0.00068454	-1.030377689	0.303201796	-0.002049419	0.000638749	-0.002049419	0.000638749
X Variable 1	-0.10267902	0.183768172	-0.558742135	0.576523024	-0.463505007	0.258146966	-0.463505007	0.258146966

HKD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.025534578
R Square	0.000652015
Adjusted R Square	-0.000828501
Standard Error	0.000347773
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.32643E-08	5.32643E-08	0.440397034	0.507157472
Residual	675	8.16386E-05	1.20946E-07		
Total	676	8.16919E-05			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.94091E-06	1.44776E-05	-0.134062785	0.893392888	-3.03675E-05	2.64857E-05	-3.03675E-05	2.64857E-05
X Variable 1	-0.00981274	0.014786592	-0.663624166	0.507157472	-0.038845986	0.019220507	-0.038845986	0.019220507

CNY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.040535171
R Square	0.0016431
Adjusted R Square	0.000164053
Standard Error	0.00159293
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.81887E-06	2.81887E-06	1.110917897	0.292259634
Residual	675	0.001712763	2.53743E-06		
Total	676	0.001715582			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000388055	0.000237276	-1.635457822	0.102419302	-0.000853943	7.78329E-05	-0.000853943	7.78329E-05
X Variable 1	-0.009305121	0.00882838	-1.0540009	0.292259634	-0.026639511	0.008029269	-0.026639511	0.008029269

TRY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.037559622
R Square	0.001410725
Adjusted R Square	-6.86663E-05
Standard Error	0.007045384
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.73335E-05	4.73335E-05	0.953584749	0.329158339
Residual	675	0.033505266	4.96374E-05		
Total	676	0.033552599			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.002680096	0.002380527	-1.125841149	0.260632887	-0.007354225	0.001994033	-0.007354225	0.001994033
X Variable 1	-0.024368599	0.024954617	-0.976516641	0.329158339	-0.073366607	0.024629409	-0.073366607	0.024629409

SAR SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.006103983
R Square	3.72586E-05
Adjusted R Square	-0.001444168
Standard Error	0.000150718
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.71314E-10	5.71314E-10	0.025150496	0.874040069
Residual	675	1.53332E-05	2.27158E-08		
Total	676	1.53337E-05			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-2.2908E-06	1.56784E-05	-0.146112265	0.883876388	-3.30751E-05	2.84935E-05	-3.30751E-05	2.84935E-05
X Variable 1	-0.000403243	0.002542693	-0.158589078	0.874040069	-0.005395782	0.004589296	-0.005395782	0.004589296

BRL SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.046360563
R Square	0.002149302
Adjusted R Square	0.000671004
Standard Error	0.011099233
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000179111	0.000179111	1.453903567	0.228325114
Residual	675	0.083155263	0.000123193		
Total	676	0.083334374			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.004057098	0.003744488	1.083485299	0.278979938	-0.003295147	0.011409344	-0.003295147	0.011409344
X Variable 1	0.034122722	0.028299312	1.205779236	0.228325114	-0.021442542	0.089687986	-0.021442542	0.089687986

SEK SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.04703068
R Square	0.002211885
Adjusted R Square	0.00073368
Standard Error	0.006164249
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.68576E-05	5.68576E-05	1.49633197	0.221663482
Residual	675	0.025648629	3.7998E-05		
Total	676	0.025705487			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000546226	0.000256768	-2.127316218	0.033755736	-0.001050385	-4.2067E-05	-0.001050385	-4.2067E-05
X Variable 1	0.054395102	0.044467818	1.223246488	0.221663482	-0.032916777	0.141706981	-0.032916777	0.141706981

RUB SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.039693255
R Square	0.001575554
Adjusted R Square	9.64071E-05
Standard Error	0.016232101
Observations	677

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000280654	0.000280654	1.065177515	0.302406918
Residual	675	0.177849735	0.000263481		
Total	676	0.178130389			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002668687	0.003545334	0.752732017	0.451873395	-0.004292523	0.009629896	-0.004292523	0.009629896
X Variable 1	0.038194882	0.037007878	1.032074375	0.302406918	-0.034469518	0.110859282	-0.034469518	0.110859282

Recent Data 8/31/2016-5/18/2015

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.086661086
R Square	0.007510144
Adjusted R Squa	0.004556305
Standard Error	0.006159961
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9.64756E-05	9.64756E-05	2.542502868	0.111759163
Residual	336	0.012749561	3.79451E-05		
Total	337	0.012846037			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000963581	0.000838625	1.149001119	0.251372784	-0.000686035	0.002613197	-0.000686035	0.002613197
X Variable 1	0.393979723	0.247083159	1.594522771	0.111759163	-0.092045052	0.880004498	-0.092045052	0.880004498

YEN SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.036548243
R Square	0.001335774
Adjusted R Squ	-0.001636441
Standard Error	0.007081559
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.25378E-05	2.25378E-05	0.449420419	0.50307082
Residual	336	0.016849889	5.01485E-05		
Total	337	0.016872427			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	9.74127E-05	0.00061892	0.15739162	0.875030755	-0.001120033	0.001314858	-0.001120033	0.001314858
X Variable 1	0.116299748	0.173481182	0.67038826	0.50307082	-0.224946305	0.457545801	-0.224946305	0.457545801

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.00155071
R Square	2.4047E-06
Adjusted R Squ	-0.002973779
Standard Error	0.176062676
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.50459E-05	2.50459E-05	0.000807982	0.977340044
Residual	336	10.41535013	0.030998066		
Total	337	10.41537517			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000563891	0.015767871	-0.035762041	0.971493337	-0.031580072	0.03045229	-0.031580072	0.03045229
X Variable 1	0.20560377	7.233196924	0.02842502	0.977340044	-14.02245178	14.43365932	-14.02245178	14.43365932

HKD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.031248087
R Square	0.000976443
Adjusted R Squ	-0.001996841
Standard Error	0.000464678
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	7.09113E-08	7.09113E-08	0.328405506	0.566982805
Residual	336	7.25511E-05	2.15926E-07		
Total	337	7.2622E-05			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-7.03098E-07	2.54262E-05	-0.027652472	0.977955747	-5.07177E-05	4.93115E-05	-5.07177E-05	4.93115E-05
X Variable 1	-0.013810421	0.024099148	-0.573066756	0.566982805	-0.061214635	0.033593794	-0.061214635	0.033593794

CNY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.018813909
R Square	0.000353963
Adjusted R Squ	-0.002621174
Standard Error	0.001869257
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.15709E-07	4.15709E-07	0.118973733	0.730366046
Residual	336	0.001174025	3.49412E-06		
Total	337	0.00117444			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	2.54873E-05	0.000710197	0.035887658	0.971393248	-0.001371505	0.00142248	-0.001371505	0.00142248
X Variable 1	0.012323027	0.035726614	0.344925692	0.730366046	-0.057952987	0.082599041	-0.057952987	0.082599041

BRL SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.110802598
R Square	0.012277216
Adjusted R Squ	0.009337565
Standard Error	0.012525669
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000655248	0.000655248	4.176419295	0.041769726
Residual	336	0.052715844	0.000156892		
Total	337	0.053371092			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.023102303	0.011444389	2.018657543	0.044316848	0.000590624	0.045613982	0.000590624	0.045613982
X Variable 1	0.163520814	0.080014923	2.043628952	0.041769726	0.006127508	0.32091412	0.006127508	0.32091412

TRY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.035712958
R Square	0.001275415
Adjusted R Squ	-0.001696979
Standard Error	0.007302101
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.28792E-05	2.28792E-05	0.429086818	0.512885564
Residual	336	0.017915746	5.33207E-05		
Total	337	0.017938625			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002142575	0.003915092	0.547260392	0.584563151	-0.005558605	0.009843755	-0.005558605	0.009843755
X Variable 1	0.025938781	0.03959834	0.655047187	0.512885564	-0.051953109	0.103830672	-0.051953109	0.103830672

SAR SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.014060653
R Square	0.000197702
Adjusted R Squa	-0.0027779
Standard Error	0.00017053
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.93214E-09	1.93214E-09	0.066440995	0.796748769
Residual	336	9.77105E-06	2.90805E-08		
Total	337	9.77299E-06			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-6.16789E-06	2.5236E-05	-0.244407847	0.807064146	-5.58084E-05	4.34727E-05	-5.58084E-05	4.34727E-05
X Variable 1	-0.000877786	0.003405421	-0.257761509	0.796748769	-0.007576418	0.005820845	-0.007576418	0.005820845

SEK SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.01714034
R Square	0.000293791
Adjusted R Squa	-0.002681525
Standard Error	0.006736976
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.48163E-06	4.48163E-06	0.098742877	0.753538496
Residual	336	0.015249981	4.53868E-05		
Total	337	0.015254463			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000468952	0.001172671	-0.399900461	0.689483936	-0.002775654	0.00183775	-0.002775654	0.00183775
X Variable 1	0.051618242	0.164267	0.314233793	0.753538496	-0.271503058	0.374739543	-0.271503058	0.374739543

RUB SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.063242784
R Square	0.00399965
Adjusted R Squa	0.001035363
Standard Error	0.012950129
Observations	338

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000226282	0.000226282	1.349278934	0.246228707
Residual	336	0.056349164	0.000167706		
Total	337	0.056575446			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.011015742	0.010214151	1.078478481	0.281593898	-0.009075998	0.031107482	-0.009075998	0.031107482
X Variable 1	0.121588064	0.104674302	1.161584665	0.246228707	-0.084311457	0.327487585	-0.084311457	0.327487585

Early Data 5/18/2015-1/28/14

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.038312635
R Square	0.001467858
Adjusted R Squ	-0.001495145
Standard Error	0.004562335
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.03116E-05	1.03116E-05	0.495395327	0.482016423
Residual	337	0.007014621	2.08149E-05		
Total	338	0.007024932			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000738111	0.001415228	0.521548891	0.602327039	-0.002045683	0.003521904	-0.002045683	0.003521904
X Variable 1	0.120874123	0.171734434	0.703843255	0.482016423	-0.216932366	0.458680612	-0.216932366	0.458680612

YEN SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.080243386
R Square	0.006439001
Adjusted R Squ	0.003490749
Standard Error	0.00464632
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.7149E-05	4.7149E-05	2.184006148	0.140385015
Residual	337	0.007275255	2.15883E-05		
Total	338	0.007322404			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000463573	0.000252531	-1.835708951	0.067281673	-0.000960308	3.31622E-05	-0.000960308	3.31622E-05
X Variable 1	-1.483500187	1.003831171	-1.477838336	0.140385015	-3.458064494	0.491064119	-3.458064494	0.491064119

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.010984704
R Square	0.000120664
Adjusted R Squ	-0.002846337
Standard Error	0.008817708
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.16206E-06	3.16206E-06	0.040668581	0.840300671
Residual	337	0.026202414	7.7752E-05		
Total	338	0.026205576			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-8.08668E-05	0.000486754	-0.166134843	0.868150461	-0.001038326	0.000876592	-0.001038326	0.000876592
X Variable 1	0.11101218	0.550479467	0.201664525	0.840300671	-0.971796501	1.193820861	-0.971796501	1.193820861

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.025949391
R Square	0.000673371
Adjusted R Squ	-0.00229199
Standard Error	0.004055958
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.73563E-06	3.73563E-06	0.227078903	0.634007108
Residual	337	0.005543918	1.64508E-05		
Total	338	0.005547653			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00090157	0.002202003	0.409431684	0.682482999	-0.003429832	0.005232971	-0.003429832	0.005232971
X Variable 1	0.255753152	0.536701243	0.476527966	0.634007108	-0.799953374	1.311459677	-0.799953374	1.311459677

HKD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.08058761
R Square	0.006494363
Adjusted R Squ	0.003546275
Standard Error	0.000163421
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.88316E-08	5.88316E-08	2.202906774	0.13868546
Residual	337	9.00005E-06	2.67064E-08		
Total	338	9.05888E-06			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	5.44911E-05	3.39988E-05	1.602734592	0.109930093	-1.23856E-05	0.000121368	-1.23856E-05	0.000121368
X Variable 1	0.056257072	0.037903478	1.484219247	0.13868546	-0.018300142	0.130814285	-0.018300142	0.130814285

CNY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.028803373
R Square	0.000829634
Adjusted R Squ	-0.002135263
Standard Error	0.001262725
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.46164E-07	4.46164E-07	0.279818897	0.597168175
Residual	337	0.000537338	1.59448E-06		
Total	338	0.000537784			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000463498	0.000735515	-0.630168071	0.529011677	-0.001910277	0.000983281	-0.001910277	0.000983281
X Variable 1	-0.012015219	0.022713977	-0.528979109	0.597168175	-0.056694255	0.032663816	-0.056694255	0.032663816

BRL SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.073972228
R Square	0.00547189
Adjusted R Squ	0.002520769
Standard Error	0.009399877
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.00016383	0.00016383	1.854172926	0.174208442
Residual	337	0.02977654	8.83577E-05		
Total	338	0.029940371			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.006818605	0.005480931	1.244059485	0.214342272	-0.003962542	0.017599752	-0.003962542	0.017599752
X Variable 1	0.061835644	0.045411283	1.361680185	0.174208442	-0.027489634	0.151160923	-0.027489634	0.151160923

TRY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.121312054
R Square	0.014716614
Adjusted R Squ	0.011792925
Standard Error	0.006756296
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.00022977	0.00022977	5.033576269	0.025509591
Residual	337	0.015383218	4.56475E-05		
Total	338	0.015612989			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.007516564	0.00322305	-2.332127325	0.020282581	-0.013856395	-0.001176733	-0.013856395	-0.001176733
X Variable 1	-0.078772281	0.035110345	-2.243563297	0.025509591	-0.147835322	-0.00970924	-0.147835322	-0.00970924

SAR SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.029508595
R Square	0.000870757
Adjusted R Squ	-0.002094018
Standard Error	0.000128399
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.84205E-09	4.84205E-09	0.293700903	0.588216747
Residual	337	5.5559E-06	1.64863E-08		
Total	338	5.56074E-06			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	3.28955E-05	6.08102E-05	0.540953302	0.588897153	-8.67199E-05	0.000152511	-8.67199E-05	0.000152511
X Variable 1	0.007161889	0.013215237	0.54194179	0.588216747	-0.018832856	0.033156634	-0.018832856	0.033156634

SEK SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.002811357
R Square	7.90373E-06
Adjusted R Squ	-0.002959432
Standard Error	0.005551927
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	8.21018E-08	8.21018E-08	0.002663577	0.958870143
Residual	337	0.010387654	3.08239E-05		
Total	338	0.010387736			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000719251	0.000371095	-1.938186339	0.053435403	-0.001449204	1.07031E-05	-0.001449204	1.07031E-05
X Variable 1	0.004822385	0.093439235	0.051609856	0.958870143	-0.178975233	0.188620004	-0.178975233	0.188620004

RUB SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.039684887
R Square	0.00157489
Adjusted R Squ	-0.001387796
Standard Error	0.018976399
Observations	339

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000191422	0.000191422	0.531575196	0.46645176
Residual	337	0.121354954	0.000360104		
Total	338	0.121546376			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002009702	0.004315431	0.465701452	0.64173004	-0.006478872	0.010498276	-0.006478872	0.010498276
X Variable 1	0.033475237	0.045913596	0.729092035	0.46645176	-0.056838104	0.123788578	-0.056838104	0.123788578

Regressions Five Year Daily

Entire Data Set 6/30/2016-01/07/2011

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.037282153
R Square	0.001389959
Adjusted R Squ	0.000468732
Standard Error	0.007472381
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	8.42468E-05	8.42468E-05	1.508812643	0.219586977
Residual	1084	0.060526736	5.58365E-05		
Total	1085	0.060610983			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000346553	0.000234444	-1.478194932	0.139646103	-0.000806568	0.000113461	-0.000806568	0.000113461
rDIFF	-0.051516657	0.041940154	-1.228337349	0.219586977	-0.133809732	0.030776418	-0.133809732	0.030776418

YEN SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.024131157
R Square	0.000582313
Adjusted R Squ	-0.000339659
Standard Error	0.007915794
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.95756E-05	3.95756E-05	0.63159478	0.426944901
Residual	1084	0.067923213	6.26598E-05		
Total	1085	0.067962788			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000659738	0.000602847	-1.094370741	0.274035521	-0.001842617	0.000523141	-0.001842617	0.000523141
rDIFF	0.043364672	0.054565331	0.794729375	0.426944901	-0.063700957	0.1504303	-0.063700957	0.1504303

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.001358472
R Square	1.84545E-06
Adjusted R Squ	-0.000920662
Standard Error	0.007248426
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.05104E-07	1.05104E-07	0.002000466	0.96433349
Residual	1084	0.056953017	5.25397E-05		
Total	1085	0.056953122			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000115632	0.000471544	-0.245220307	0.806332269	-0.001040875	0.000809611	-0.001040875	0.000809611
rDIFF	-0.001545363	0.034551344	-0.044726574	0.96433349	-0.069340451	0.066249724	-0.069340451	0.066249724

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.054381586
R Square	0.002957357
Adjusted R Squ	0.002037576
Standard Error	0.007254808
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000169228	0.000169228	3.21528359	0.073232244
Residual	1084	0.057053354	5.26322E-05		
Total	1085	0.057222582			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000144317	0.000220563	-0.654313972	0.513048338	-0.000577096	0.000288461	-0.000577096	0.000288461
rDIFF	-0.167570609	0.093451915	-1.793121187	0.073232244	-0.350937737	0.015796518	-0.350937737	0.015796518

HKD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.048055129
R Square	0.002309295
Adjusted R Squ	0.001388917
Standard Error	0.000331128
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.75109E-07	2.75109E-07	2.509070388	0.113484363
Residual	1084	0.000118856	1.09646E-07		
Total	1085	0.000119131			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	3.99723E-05	2.55504E-05	1.564450827	0.118003599	-1.01615E-05	9.01061E-05	-1.01615E-05	9.01061E-05
rDIFF	-0.011889787	0.007506157	-1.584004542	0.113484363	-0.02661803	0.002838456	-0.02661803	0.002838456

CNY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.085025738
R Square	0.007229376
Adjusted R Squ	0.006313536
Standard Error	0.001331949
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.40041E-05	1.40041E-05	7.893710265	0.005049895
Residual	1084	0.001923112	1.77409E-06		
Total	1085	0.001937117			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000518826	0.000180271	-2.87803408	0.004080162	-0.000872546	-0.000165107	-0.000872546	-0.000165107
rDIFF	-0.022442376	0.007987819	-2.809574748	0.005049895	-0.038115715	-0.006769037	-0.038115715	-0.006769037

BRL SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.025410537
R Square	0.000645695
Adjusted R Squ	-0.000276218
Standard Error	0.014451523
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000146273	0.000146273	0.700386029	0.402838469
Residual	1084	0.226389637	0.000208847		
Total	1085	0.22653591			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001517617	0.002640285	0.574793067	0.565550526	-0.00366303	0.006698265	-0.00366303	0.006698265
rDIFF	0.020791437	0.024843671	0.836890691	0.402838469	-0.027955692	0.069538566	-0.027955692	0.069538566

TRY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.01746217
R Square	0.000304927
Adjusted R Squ	-0.000617301
Standard Error	0.009087909
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.73078E-05	2.73078E-05	0.330642085	0.565400573
Residual	1084	0.089527662	8.25901E-05		
Total	1085	0.089554969			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.001624468	0.001929894	-0.841739638	0.400119361	-0.005411219	0.002162283	-0.005411219	0.002162283
rDIFF	-0.014249561	0.024781205	-0.575014856	0.565400573	-0.062874122	0.034375	-0.062874122	0.034375

SEK SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.028798001
R Square	0.000829325
Adjusted R Squ	-9.24193E-05
Standard Error	0.010651999
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000102088	0.000102088	0.899734297	0.343064378
Residual	1084	0.122996154	0.000113465		
Total	1085	0.123098242			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000191359	0.000334058	-0.572833399	0.566876299	-0.000846832	0.000464114	-0.000846832	0.000464114
rDIFF	-0.038000409	0.040061863	-0.94854325	0.343064378	-0.116607986	0.040607168	-0.116607986	0.040607168

RUB SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.0759825
R Square	0.00577334
Adjusted R Squ	0.004856157
Standard Error	0.01853121
Observations	1086

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.002161616	0.002161616	6.294641933	0.012255382
Residual	1084	0.372251819	0.000343406		
Total	1085	0.374413435			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.006546676	0.002966955	2.206530723	0.027555936	0.000725052	0.0123683	0.000725052	0.0123683
rDIFF	0.106742393	0.042545283	2.5089125	0.012255382	0.02326196	0.190222827	0.02326196	0.190222827

Recent 6/30/2016-07/31/2013

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.034650006
R Square	0.001200623
Adjusted R Squ	-0.000645587
Standard Error	0.009236336
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.54785E-05	5.54785E-05	0.650317782	0.420353434
Residual	541	0.046152653	8.53099E-05		
Total	542	0.046208132			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000230662	0.000466153	-0.494820709	0.620927573	-0.001146353	0.000685029	-0.001146353	0.000685029
rDIFF	-0.069727469	0.086465148	-0.806422831	0.420353434	-0.239576027	0.100121089	-0.239576027	0.100121089

YEN SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.025118434
R Square	0.000630936
Adjusted R Squ	-0.001216327
Standard Error	0.009263157
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.93072E-05	2.93072E-05	0.341551724	0.559178526
Residual	541	0.046421083	8.58061E-05		
Total	542	0.046450391			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.002320879	0.003849332	-0.602930173	0.546807803	-0.009882348	0.00524059	-0.009882348	0.00524059
rDIFF	0.157680619	0.269805051	0.584424267	0.559178526	-0.372313259	0.687674497	-0.372313259	0.687674497

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.039444386
R Square	0.00155586
Adjusted R Squ	-0.000289693
Standard Error	0.006719369
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.80628E-05	3.80628E-05	0.843031693	0.358940296
Residual	541	0.024426109	4.51499E-05		
Total	542	0.024464172			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000948264	0.001160892	0.816841241	0.414378708	-0.001332143	0.003228672	-0.001332143	0.003228672
rDIFF	-0.058971135	0.064226985	-0.918167573	0.358940296	-0.185135968	0.067193697	-0.185135968	0.067193697

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.075382781
R Square	0.005682564
Adjusted R Squ	0.003844639
Standard Error	0.008963375
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000248405	0.000248405	3.09183649	0.07925135
Residual	541	0.043465068	8.03421E-05		
Total	542	0.043713472			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	5.4122E-06	0.000409919	0.013203095	0.989470628	-0.000799816	0.00081064	-0.000799816	0.00081064
rDIFF	-0.244179085	0.138867367	-1.758361877	0.07925135	-0.516964395	0.028606225	-0.516964395	0.028606225

HKD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.060608345
R Square	0.003673371
Adjusted R Squ	0.001831733
Standard Error	0.000372279
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.76437E-07	2.76437E-07	1.99462095	0.158433517
Residual	541	7.49779E-05	1.38591E-07		
Total	542	7.52544E-05			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	5.66732E-05	4.35744E-05	1.300607899	0.193946439	-2.89225E-05	0.000142269	-2.89225E-05	0.000142269
rDIFF	-0.016754923	0.011863484	-1.412310501	0.158433517	-0.04005906	0.006549214	-0.04005906	0.006549214

CNY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.048825255
R Square	0.002383906
Adjusted R Squ	0.000539883
Standard Error	0.001605169
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.33092E-06	3.33092E-06	1.292774742	0.256040579
Residual	541	0.001393924	2.57657E-06		
Total	542	0.001397255			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000406048	0.000237461	-1.709960727	0.087846514	-0.000872506	6.04095E-05	-0.000872506	6.04095E-05
rDIFF	-0.013022178	0.011453077	-1.137002525	0.256040579	-0.035520129	0.009475773	-0.035520129	0.009475773

BRL SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.028854713
R Square	0.000832594
Adjusted R Squ	-0.001014295
Standard Error	0.018896509
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000160974	0.000160974	0.450808939	0.502237635
Residual	541	0.193179228	0.000357078		
Total	542	0.193340202			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.003675276	0.006467038	0.568309084	0.570060917	-0.009028305	0.016378858	-0.009028305	0.016378858
rDIFF	0.036802409	0.054812548	0.67142307	0.502237635	-0.070869092	0.14447391	-0.070869092	0.14447391

TRY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.055766485
R Square	0.003109901
Adjusted R Squ	0.00126722
Standard Error	0.011442893
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000220988	0.000220988	1.687704952	0.19445716
Residual	541	0.070838428	0.00013094		
Total	542	0.071059416			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.007450054	0.005188415	-1.435901635	0.151608277	-0.017641962	0.002741854	-0.017641962	0.002741854
rDIFF	-0.082408063	0.063433905	-1.299116989	0.19445716	-0.207015	0.042198874	-0.207015	0.042198874

SEK SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.024871452
R Square	0.000618589
Adjusted R Squ	-0.001228696
Standard Error	0.012831488
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.51344E-05	5.51344E-05	0.334863863	0.563049835
Residual	541	0.089074077	0.000164647		
Total	542	0.089129212			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00013102	0.0008084	-0.162073496	0.87130849	-0.001719008	0.001456968	-0.001719008	0.001456968
rDIFF	-0.042646269	0.073696506	-0.578674229	0.563049835	-0.187412635	0.102120098	-0.187412635	0.102120098

RUB SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.080904104
R Square	0.006545474
Adjusted R Squ	0.004709144
Standard Error	0.025294037
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.002280482	0.002280482	3.564432378	0.059564788
Residual	541	0.346125475	0.000639788		
Total	542	0.348405957			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.008789534	0.005411672	1.624180867	0.104919662	-0.00184093	0.019419999	-0.00184093	0.019419999
rDIFF	0.135031023	0.071521789	1.887970439	0.059564788	-0.005463419	0.275525466	-0.005463419	0.275525466

Early 08/01/2013-01/07/2011

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.038727227
R Square	0.001499798
Adjusted R Squ	-0.000349276
Standard Error	0.005154521
Observations	542

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.15504E-05	2.15504E-05	0.811107459	0.368194503
Residual	540	0.014347305	2.65691E-05		
Total	541	0.014368855			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.001154263	0.001177091	-0.980606121	0.327226135	-0.003466501	0.001157976	-0.003466501	0.001157976
-0.00398	-0.183261235	0.203484537	-0.900615045	0.368194503	-0.582979499	0.216457028	-0.582979499	0.216457028

YEN SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.018799638
R Square	0.000353426
Adjusted R Squ	-0.001494349
Standard Error	0.006301777
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	7.59584E-06	7.59584E-06	0.191271267	0.662035181
Residual	541	0.021484404	3.97124E-05		
Total	542	0.021492			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000733003	0.000900483	-0.814010917	0.415996833	-0.002501874	0.001035868	-0.002501874	0.001035868
X Variable 1	0.061826662	0.141367942	0.437345706	0.662035181	-0.215870673	0.339523998	-0.215870673	0.339523998

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.050221124
R Square	0.002522161
Adjusted R Squ	0.000678394
Standard Error	0.007739317
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	8.19355E-05	8.19355E-05	1.367939406	0.242681261
Residual	541	0.032404293	5.9897E-05		
Total	542	0.032486228			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00211329	0.001682353	-1.256151312	0.209603289	-0.005418034	0.001191455	-0.005418034	0.001191455
X Variable 1	0.290695175	0.248544635	1.169589418	0.242681261	-0.197535621	0.778925972	-0.197535621	0.778925972

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.021142681
R Square	0.000447013
Adjusted R Squ	-0.00140059
Standard Error	0.004994812
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.03601E-06	6.03601E-06	0.241942156	0.62300641
Residual	541	0.01349695	2.49482E-05		
Total	542	0.013502986			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-3.75944E-05	0.000242646	-0.154934892	0.876930431	-0.000514239	0.00043905	-0.000514239	0.00043905
X Variable 1	0.076606724	0.155743926	0.49187616	0.62300641	-0.229330198	0.382543646	-0.229330198	0.382543646

HKD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.028616921
R Square	0.000818928
Adjusted R Squ	-0.001027987
Standard Error	0.00028463
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.5922E-08	3.5922E-08	0.443403242	0.50576823
Residual	541	4.38287E-05	8.10142E-08		
Total	542	4.38646E-05			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	2.4351E-05	3.00007E-05	0.811680687	0.417331852	-3.45811E-05	8.32831E-05	-3.45811E-05	8.32831E-05
X Variable 1	-0.006420009	0.009641314	-0.665885307	0.50576823	-0.025359008	0.012518989	-0.025359008	0.012518989

CNY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.064101761
R Square	0.004109036
Adjusted R Squ	0.002268202
Standard Error	0.000981749
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.15143E-06	2.15143E-06	2.2321604	0.135747738
Residual	541	0.000521432	9.63831E-07		
Total	542	0.000523584			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000535503	0.000425571	-1.258317556	0.208819711	-0.001371477	0.000300471	-0.001371477	0.000300471
X Variable 1	-0.026203423	0.017538617	-1.494041632	0.135747738	-0.060655556	0.008248709	-0.060655556	0.008248709

BRL SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.070310925
R Square	0.004943626
Adjusted R Squ	0.003104335
Standard Error	0.007813764
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000164103	0.000164103	2.687789155	0.101701356
Residual	541	0.033030708	6.10549E-05		
Total	542	0.033194811			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.004299345	0.00306177	1.404202568	0.16083235	-0.001715069	0.01031376	-0.001715069	0.01031376
X Variable 1	0.053912705	0.032884673	1.63944782	0.101701356	-0.010684585	0.118509996	-0.010684585	0.118509996

TRY SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.006300731
R Square	3.96992E-05
Adjusted R Squ	-0.001808656
Standard Error	0.005839057
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	7.32288E-07	7.32288E-07	0.021478124	0.883538526
Residual	541	0.018445173	3.40946E-05		
Total	542	0.018445905			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000530438	0.001509231	-0.351462748	0.725378054	-0.003495109	0.002434232	-0.003495109	0.002434232
X Variable 1	-0.002998917	0.020462855	-0.146554167	0.883538526	-0.043195303	0.037197469	-0.043195303	0.037197469

SEK SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.010627995
R Square	0.000112954
Adjusted R Squ	-0.001735266
Standard Error	0.007918347
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.83193E-06	3.83193E-06	0.061115163	0.80483577
Residual	541	0.033920822	6.27002E-05		
Total	542	0.033924654			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000226865	0.00072256	-0.313974456	0.75366147	-0.001646231	0.001192501	-0.001646231	0.001192501
X Variable 1	-0.04126673	0.16692661	-0.247214812	0.80483577	-0.369170455	0.286636994	-0.369170455	0.286636994

RUB SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.019864573
R Square	0.000394601
Adjusted R Squ	-0.001453098
Standard Error	0.006901717
Observations	543

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.01728E-05	1.01728E-05	0.213563564	0.644174329
Residual	541	0.025769828	4.76337E-05		
Total	542	0.025780001			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000853728	0.002523857	0.338263365	0.735295958	-0.004104031	0.005811488	-0.004104031	0.005811488
X Variable 1	0.018438849	0.039899755	0.46212938	0.644174329	-0.059938578	0.096816276	-0.059938578	0.096816276

Regressions Five Year Weekly

Entire Set

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.047554618
R Square	0.002261442
Adjusted R Squ	0.001221047
Standard Error	0.012436235
Observations	961

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000336175	0.000336175	2.173638121	0.140721933
Residual	959	0.14831888	0.00015466		
Total	960	0.148655054			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-6.46511E-05	0.000413939	-0.15618486	0.875920181	-0.000876983	0.000747681	-0.000876983	0.000747681
rDIFF	-0.108402978	0.073527126	-1.474326328	0.140721933	-0.252695606	0.035889651	-0.252695606	0.035889651

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.047522328
R Square	0.002258372
Adjusted R Squ	0.001217974
Standard Error	0.013018305
Observations	961

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000367879	0.000367879	2.170680637	0.140992103
Residual	959	0.162527743	0.000169476		
Total	960	0.162895622			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000647874	0.000493575	-1.312614602	0.189626887	-0.001616487	0.000320738	-0.001616487	0.000320738
rDIFF	-0.09917243	0.067312076	-1.473322991	0.140992103	-0.231268391	0.032923532	-0.231268391	0.032923532

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.063510408
R Square	0.004033572
Adjusted R Squ	0.002995025
Standard Error	0.016172092
Observations	961

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001015772	0.001015772	3.883861289	0.049039569
Residual	959	0.250813561	0.000261537		
Total	960	0.251829333			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002372416	0.001115289	2.127176256	0.033660121	0.000183728	0.004561105	0.000183728	0.004561105
rDIFF	-0.121223752	0.061511436	-1.970751453	0.049039569	-0.241936301	-0.000511203	-0.241936301	-0.000511203

Recent

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.029874387
R Square	0.000892479
Adjusted R Squ	-0.001206486
Standard Error	0.014826575
Observations	478

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9.34705E-05	9.34705E-05	0.425199491	0.514668674
Residual	476	0.104637808	0.000219827		
Total	477	0.104731278			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000408506	0.000707204	-0.577635373	0.563783448	-0.001798134	0.000981122	-0.001798134	0.000981122
rDIFF	-0.093403577	0.143240933	-0.652073225	0.514668674	-0.374866315	0.18805916	-0.374866315	0.18805916

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.033327167
R Square	0.0011107
Adjusted R Squ	-0.000987807
Standard Error	0.014532298
Observations	478

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000111778	0.000111778	0.529281092	0.467266939
Residual	476	0.100525335	0.000211188		
Total	477	0.100637113			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000700447	0.00072942	-0.960279716	0.337401978	-0.002133727	0.000732834	-0.002133727	0.000732834
rDIFF	0.08729565	0.119991204	0.727517073	0.467266939	-0.148482294	0.323073593	-0.148482294	0.323073593

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.049600194
R Square	0.002460179
Adjusted R Squ	0.000364507
Standard Error	0.017981249
Observations	478

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000379562	0.000379562	1.173933426	0.27914301
Residual	476	0.153902858	0.000323325		
Total	477	0.154282421			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002027198	0.001659191	1.221798907	0.222388407	-0.001233047	0.005287443	-0.001233047	0.005287443
rDIFF	-0.140255421	0.129448768	-1.083482084	0.27914301	-0.394617101	0.11410626	-0.394617101	0.11410626

Early

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.07518986
R Square	0.005653515
Adjusted R Squ	0.003586267
Standard Error	0.009515337
Observations	483

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000247613	0.000247613	2.734801996	0.098836098
Residual	481	0.043550528	9.05416E-05		
Total	482	0.043798141			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000283742	0.00044387	0.639246844	0.522966667	-0.000588421	0.001155905	-0.000588421	0.001155905
X Variable 1	-0.117635376	0.071133635	-1.653723676	0.098836098	-0.257406436	0.022135684	-0.257406436	0.022135684

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.115180157
R Square	0.013266469
Adjusted R Squ	0.011215048
Standard Error	0.011264365
Observations	483

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000820567	0.000820567	6.466965187	0.011301955
Residual	481	0.061032129	0.000126886		
Total	482	0.061852696			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000644814	0.000652169	-0.988721428	0.323296552	-0.001926266	0.000636639	-0.001926266	0.000636639
X Variable 1	-0.197651686	0.077723126	-2.543022844	0.011301955	-0.350370491	-0.04493288	-0.350370491	-0.04493288

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.107162408
R Square	0.011483782
Adjusted R Squ	0.009428654
Standard Error	0.014158699
Observations	483

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001120193	0.001120193	5.587868891	0.018481807
Residual	481	0.096425475	0.000200469		
Total	482	0.097545668			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0046406	0.00190851	2.431530479	0.015399303	0.000890553	0.008390647	0.000890553	0.008390647
X Variable 1	-0.203494138	0.086085261	-2.363867359	0.018481807	-0.37264377	-0.034344506	-0.37264377	-0.034344506

Regressions Three Month Weekly

Entire

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.054941572
R Square	0.003018576
Adjusted R Squ	-0.00425866
Standard Error	0.011704613
Observations	139

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.68264E-05	5.68264E-05	0.414797048	0.520621489
Residual	137	0.018768722	0.000136998		
Total	138	0.018825549			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	1.90725E-06	0.00214989	0.00088714	0.999293455	-0.004249351	0.004253166	-0.004249351	0.004253166
rDIFF	0.222080503	0.344820124	0.644047396	0.520621489	-0.459777574	0.90393858	-0.459777574	0.90393858

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.080798854
R Square	0.006528455
Adjusted R Squ	-0.000723162
Standard Error	0.012280682
Observations	139

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000135775	0.000135775	0.900275721	0.34437852
Residual	137	0.020661674	0.000150815		
Total	138	0.02079745			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.004072205	0.002671091	-1.524547415	0.129677166	-0.009354104	0.001209694	-0.009354104	0.001209694
rDIFF	-0.68234391	0.719143485	-0.948828605	0.34437852	-2.104400684	0.739712864	-2.104400684	0.739712864

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.076101714
R Square	0.005791471
Adjusted R Squ	-0.001465526
Standard Error	0.020032092
Observations	139

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000320247	0.000320247	0.798053418	0.373242581
Residual	137	0.054976004	0.000401285		
Total	138	0.055296251			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.001502098	0.001981339	-0.758122552	0.449679778	-0.00542006	0.002415864	-0.00542006	0.002415864
rDIFF	0.991339142	1.109701756	0.893338356	0.373242581	-1.203019747	3.18569803	-1.203019747	3.18569803

Recent

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.090935152
R Square	0.008269202
Adjusted R Squ	-0.006757022
Standard Error	0.013046655
Observations	68

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9.36725E-05	9.36725E-05	0.550318017	0.460819559
Residual	66	0.011234204	0.000170215		
Total	67	0.011327876			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002155992	0.004226525	0.510109998	0.611676161	-0.006282536	0.010594521	-0.006282536	0.010594521
rDIFF	0.992860639	1.338386132	0.741834225	0.460819559	-1.679313491	3.665034768	-1.679313491	3.665034768

GBP

Regression Statistics	
Multiple R	0.084882973
R Square	0.007205119
Adjusted R Squ	-0.007837228
Standard Error	0.014709355
Observations	68

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000103637	0.000103637	0.47898903	0.491308354
Residual	66	0.014280098	0.000216365		
Total	67	0.014383735			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.004294004	0.003283537	-1.307737371	0.195499358	-0.010849798	0.002261789	-0.010849798	0.002261789
rDIFF	-0.717832705	1.037195102	-0.692090334	0.491308354	-2.788659542	1.352994132	-2.788659542	1.352994132

CHF

Regression Statistics	
Multiple R	0.090992521
R Square	0.008279639
Adjusted R Squ	-0.006746427
Standard Error	0.013490243
Observations	68

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000100278	0.000100278	0.551018393	0.460535592
Residual	66	0.012011119	0.000181987		
Total	67	0.012111397			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.002230627	0.002993596	-0.745132898	0.458836704	-0.008207535	0.003746281	-0.008207535	0.003746281
rDIFF	1.023489592	1.378797168	0.742306132	0.460535592	-1.729367774	3.776346958	-1.729367774	3.776346958

Early

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.022676319
R Square	0.000514215
Adjusted R Squ	-0.013764153
Standard Error	0.010493262
Observations	72

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.96541E-06	3.96541E-06	0.036013601	0.850036633
Residual	70	0.007707599	0.000110109		
Total	71	0.007711564			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000200192	0.006766123	-0.029587426	0.976480289	-0.013694799	0.013294415	-0.013694799	0.013294415
X Variable 1	0.157856457	0.831819462	0.189772498	0.850036633	-1.501155147	1.816868062	-1.501155147	1.816868062

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.000273873
R Square	7.50063E-08
Adjusted R Squ	-0.014285638
Standard Error	0.009890372
Observations	72

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.13595E-10	5.13595E-10	5.25044E-06	0.998178259
Residual	70	0.006847362	9.78195E-05		
Total	71	0.006847363			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.0008345	0.011297536	-0.073865683	0.941327936	-0.023366725	0.021697725	-0.023366725	0.021697725
X Variable 1	-0.006193539	2.702968476	-0.002291384	0.998178259	-5.397094179	5.384707101	-5.397094179	5.384707101

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.086532406
R Square	0.007487857
Adjusted R Squ	-0.006690888
Standard Error	0.024886659
Observations	72

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000327079	0.000327079	0.528104386	0.469828161
Residual	70	0.043354204	0.000619346		
Total	71	0.043681284			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000584704	0.002935782	-0.199164602	0.84271137	-0.006439936	0.005270528	-0.006439936	0.005270528
X Variable 1	1.63504722	2.249937283	0.72670791	0.469828161	-2.852311197	6.122405637	-2.852311197	6.122405637

Regressions Three Month Monthly

Entire

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.270581018
R Square	0.073214087
Adjusted R Squ	0.064939213
Standard Error	0.030295595
Observations	114

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.008120677	0.008120677	8.847758308	0.003594729
Residual	112	0.102796185	0.000917823		
Total	113	0.110916862			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.010760837	0.004862824	2.212878362	0.028934085	0.001125775	0.020395899	0.001125775	0.020395899
rDIFF	1.95328575	0.656672994	2.974518164	0.003594729	0.652172387	3.254399113	0.652172387	3.254399113

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.036010498
R Square	0.001296756
Adjusted R Squ	-0.007620237
Standard Error	0.034219992
Observations	114

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000170294	0.000170294	0.145425251	0.703668528
Residual	112	0.131152877	0.001171008		
Total	113	0.131323172			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002269976	0.003343086	0.679006316	0.498534616	-0.00435392	0.008893873	-0.00435392	0.008893873
rDIFF	-0.206087827	0.540421265	-0.381346629	0.703668528	-1.276863289	0.864687635	-1.276863289	0.864687635

Recent

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.003478017
R Square	1.20966E-05
Adjusted R Squ	-0.0188556
Standard Error	0.025821083
Observations	55

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.27458E-07	4.27458E-07	0.000641128	0.979894418
Residual	53	0.035336602	0.000666728		
Total	54	0.035337029			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.004655986	0.009738441	-0.478103794	0.634542543	-0.024188826	0.014876854	-0.024188826	0.014876854
rDIFF	0.032487894	1.283066753	0.025320502	0.979894418	-2.541018108	2.605993896	-2.541018108	2.605993896

CHF

Regression Statistics	
Multiple R	0.00566224
R Square	3.2061E-05
Adjusted R Squ	-0.018835259
Standard Error	0.025264319
Observations	55

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.08463E-06	1.08463E-06	0.001699286	0.967273505
Residual	53	0.033829148	0.000638286		
Total	54	0.033830232			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.001072413	0.004666224	-0.229824487	0.819112855	-0.010431673	0.008286848	-0.010431673	0.008286848
rDIFF	-0.157706731	3.825754088	-0.041222391	0.967273505	-7.831197672	7.51578421	-7.831197672	7.51578421

Early

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.339944853
R Square	0.115562503
Adjusted R Squ	0.100046056
Standard Error	0.033876941
Observations	59

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.00854738	0.00854738	7.447742423	0.00843224
Residual	57	0.065415887	0.001147647		
Total	58	0.073963267			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.014232026	0.006120761	2.32520531	0.023644241	0.001975413	0.026488638	0.001975413	0.026488638
X Variable 1	2.310746011	0.846720136	2.729055225	0.00843224	0.615218185	4.006273837	0.615218185	4.006273837

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.058221862
R Square	0.003389785
Adjusted R Squ	-0.014094605
Standard Error	0.041068466
Observations	59

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000326993	0.000326993	0.193874951	0.661376187
Residual	57	0.096137278	0.001686619		
Total	58	0.096464271			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.005569568	0.005619713	0.991076939	0.32583667	-0.005683713	0.01682285	-0.005683713	0.01682285
X Variable 1	-0.290499116	0.659756936	-0.440312333	0.661376187	-1.611639591	1.030641359	-1.611639591	1.030641359

Regressions Five Year Monthly

Entire

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.108125541
R Square	0.011691133
Adjusted R Squ	0.007239291
Standard Error	0.02601327
Observations	224

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001777079	0.001777079	2.626133929	0.106536908
Residual	222	0.150225224	0.00067669		
Total	223	0.152002304			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000382222	0.001801855	-0.212126853	0.832202702	-0.003933151	0.003168707	-0.003933151	0.003168707
rDIFF	-0.51795054	0.319616988	-1.620535075	0.106536908	-1.147822102	0.111921022	-1.147822102	0.111921022

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.110613735
R Square	0.012235398
Adjusted R Squ	0.007786008
Standard Error	0.024714508
Observations	224

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001679661	0.001679661	2.749904611	0.098672474
Residual	222	0.135599133	0.000610807		
Total	223	0.137278794			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.002708063	0.001940276	-1.395710355	0.164196085	-0.006531779	0.001115653	-0.006531779	0.001115653
rDIFF	-0.441795348	0.266417239	-1.658283634	0.098672474	-0.966825771	0.083235076	-0.966825771	0.083235076

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.155399678
R Square	0.02414906
Adjusted R Squ	0.019753335
Standard Error	0.030462137
Observations	224

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.00509789	0.00509789	5.493760435	0.019967869
Residual	222	0.206003072	0.000927942		
Total	223	0.211100962			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.010613406	0.004289301	2.474390712	0.014095486	0.002160449	0.019066362	0.002160449	0.019066362
rDIFF	-0.562467202	0.23997298	-2.343877223	0.019967869	-1.035383728	-0.089550676	-1.035383728	-0.089550676

Recent

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.106950225
R Square	0.011438351
Adjusted R Squ	0.002285002
Standard Error	0.031353042
Observations	110

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.001228408	0.001228408	1.249635646	0.26610256
Residual	108	0.106165429	0.000983013		
Total	109	0.107393837			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00309321	0.003172087	-0.97513412	0.331672847	-0.009380837	0.003194416	-0.009380837	0.003194416
rDIFF	-0.725958513	0.649411687	-1.117871033	0.26610256	-2.013205138	0.561288112	-2.013205138	0.561288112

GBP

Regression Statistics	
Multiple R	0.068811979
R Square	0.004735088
Adjusted R Squ	-0.004480327
Standard Error	0.028141492
Observations	110

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000406918	0.000406918	0.513822544	0.4750361
Residual	108	0.085529906	0.000791944		
Total	109	0.085936824			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.003052015	0.002919847	-1.045265466	0.298234173	-0.008839658	0.002735628	-0.008839658	0.002735628
rDIFF	0.357718457	0.499039326	0.716814163	0.4750361	-0.631464062	1.346900976	-0.631464062	1.346900976

CHF

Regression Statistics	
Multiple R	0.132994985
R Square	0.017687666
Adjusted R Squ	0.008592182
Standard Error	0.034507816
Observations	110

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.002315686	0.002315686	1.944664515	0.166024877
Residual	108	0.128605253	0.001190789		
Total	109	0.130920939			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.009986506	0.006599074	1.513319205	0.133119557	-0.003094004	0.023067016	-0.003094004	0.023067016
rDIFF	-0.742107968	0.53216309	-1.394512286	0.166024877	-1.796947534	0.312731599	-1.796947534	0.312731599

Early

CAD SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.132701282
R Square	0.01760963
Adjusted R Squ	0.008838288
Standard Error	0.019526684
Observations	114

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000765493	0.000765493	2.00763226	0.159285041
Residual	112	0.042704636	0.000381291		
Total	113	0.043470129			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00203409	0.001872267	1.086431831	0.279620704	-0.001675567	0.005743747	-0.001675567	0.005743747
X Variable 1	-0.422486893	0.298174952	-1.416909404	0.159285041	-1.013282338	0.168308552	-1.013282338	0.168308552

GBP SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.256054688
R Square	0.065564003
Adjusted R Squ	0.057220825
Standard Error	0.020337594
Observations	114

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.003250372	0.003250372	7.858396271	0.005963424
Residual	112	0.046325186	0.000413618		
Total	113	0.049575558			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.002553839	0.002444204	-1.044855168	0.298339791	-0.007396717	0.002289038	-0.007396717	0.002289038
X Variable 1	-0.812093446	0.289693695	-2.803283124	0.005963424	-1.386084368	-0.238102524	-1.386084368	-0.238102524

CHF SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.248008883
R Square	0.061508406
Adjusted R Squ	0.053129017
Standard Error	0.025918147
Observations	114

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.004930943	0.004930943	7.340440268	0.007801808
Residual	112	0.075236038	0.00067175		
Total	113	0.080166981			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.01936578	0.007017535	2.759627261	0.006761863	0.005461435	0.033270126	0.005461435	0.033270126
X Variable 1	-0.868371195	0.320512045	-2.709324688	0.007801808	-1.503424727	-0.233317664	-1.503424727	-0.233317664

Correlation Tables (Without Significance)

Daily Correlation (Price)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.720117	1										
CHF	0.808798	0.663373	1									
GBP	0.345188	-0.11544	0.031058	1								
HKD	0.112088	0.103199	0.278574	-0.20196	1							
CNY	0.712262	0.613102	0.923826	-0.21409	0.310045	1						
BRL	0.011801	-0.00029	-0.19415	0.114398	0.381469	-0.21164	1					
TRY	-0.34946	-0.30334	-0.39116	0.00275	0.405113	-0.415	0.815772	1				
SAR	0.154785	0.026889	0.011874	0.228018	-0.07405	-0.04145	0.01485	-0.04101	1			
SEK	0.848864	0.543321	0.69402	0.580749	0.182446	0.497231	0.235299	-0.02925	0.148827	1		
RUB	-0.25718	-0.2995	-0.34969	0.081937	0.381791	-0.38371	0.839874	0.917465	-0.02198	0.038927	1	
EUR	0.853704	0.525348	0.702348	0.569461	0.189585	0.519463	0.160337	-0.1532	0.130021	0.918467	-0.04044	1

Recent Correlation (price)- October 2006-October 2016

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.617745	1										
CHF	0.223255	0.43936	1									
GBP	0.377382	-0.31547	-0.45163	1								
HKD	-0.24776	0.133161	0.376079	-0.63959	1							
CNY	-0.00072	0.283888	0.850696	-0.65111	0.620529	1						
BRL	0.875386	0.57961	-0.04398	0.453083	-0.4173	-0.30144	1					
TRY	0.605679	0.138002	-0.54453	0.73963	-0.5727	-0.70525	0.815043	1				
SAR	0.224517	-0.01478	-0.09471	0.275898	-0.07799	-0.2009	0.174199	0.233188	1			
SEK	0.864547	0.358726	0.218105	0.584749	-0.36725	-0.04991	0.756305	0.59238	0.205123	1		
RUB	0.747909	0.295566	-0.33763	0.70856	-0.52157	-0.5262	0.867482	0.924659	0.205546	0.764343	1	
EUR	0.720837	0.30406	-0.0773	0.614881	-0.35592	-0.31327	0.840741	0.802596	0.190885	0.81369	0.857069	1

Early Correlation (Price)-September 1996-October 2006

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.380727	1										
CHF	0.787812	0.352846	1									
GBP	0.819067	0.410006	0.922511	1								
HKD	0.234822	-0.20164	0.214824	0.272618	1							
CNY	0.728569	0.041764	0.385904	0.430114	0.120037	1						
BRL	-0.11595	-0.34074	-0.16199	-0.07691	0.777065	-0.1829	1					
TRY	-0.09462	-0.22327	-0.05025	-0.05917	0.719375	-0.27786	0.906018	1				
SAR	0.15529	0.185013	0.159209	0.113014	-0.24056	0.053321	-0.3223	-0.20817	1			
SEK	0.717577	0.345767	0.863015	0.872514	0.529381	0.231526	0.262228	0.356024	0.044146	1		
RUB	-0.03467	-0.39227	-0.02488	0.004416	0.70223	-0.22175	0.893945	0.906234	-0.19458	0.350387	1	
EUR	0.765111	0.215373	0.91568	0.93072	0.482301	0.338408	0.161256	0.189087	0.039769	0.940931	0.272133	1

Daily Correlation (Price Change)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.015637	1										
CHF	0.286776	0.368068	1									
GBP	0.416629	0.131551	0.492471	1								
HKD	0.123951	0.063243	0.073277	0.110136	1							
CNY	0.089959	0.039685	0.079902	0.118742	0.128058	1						
BRL	0.326085	-0.0589	0.092721	0.220314	0.087062	0.073185	1					
TRY	0.278931	-0.05255	0.157715	0.225291	0.061656	0.056019	0.324841	1				
SAR	0.031554	-0.00967	-0.00976	0.010376	0.046081	0.029046	0.064888	0.012252	1			
SEK	0.490424	0.187351	0.632661	0.578633	0.130535	0.100728	0.269307	0.305715	0.000776	1		
RUB	0.152362	-0.07134	0.07012	0.105542	0.067657	0.047836	0.113589	0.08714	0.091171	0.136914	1	
EUR	0.434692	0.239381	0.749207	0.617703	0.117132	0.098988	0.205164	0.262506	-0.00841	0.796953	0.113942	1

Recent Correlation (price change)- October 2006-October 2016

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	-0.09521	1										
CHF	0.316452	0.347506	1									
GBP	0.509512	0.000154	0.399299	1								
HKD	0.155262	0.01216	0.079381	0.125726	1							
CNY	0.108906	0.030251	0.099136	0.147548	0.145108	1						
BRL	0.497599	-0.16318	0.185522	0.37845	0.139833	0.101592	1					
TRY	0.513154	-0.20989	0.193924	0.418112	0.104489	0.093264	0.586357	1				
SAR	0.028266	-0.00121	-0.01603	0.007369	0.055253	0.032496	0.098973	0.022259	1			
SEK	0.574016	0.073729	0.552404	0.583257	0.154715	0.122304	0.440629	0.494181	-0.00802	1		
RUB	0.376504	-0.03414	0.217364	0.271561	0.155693	0.112574	0.365194	0.327424	0.024536	0.329629	1	
EUR	0.511066	0.207066	0.687698	0.614858	0.134722	0.12443	0.363314	0.438481	-0.01011	0.82352	0.304448	1

Early Correlation (Price change)-September 1996-October 2006

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.183351	1										
CHF	0.243932	0.392841	1									
GBP	0.236104	0.301003	0.631877	1								
HKD	0.063005	0.129452	0.064515	0.08446	1							
CNY	0.02813	0.074167	0.043821	0.04842	0.093217	1						
BRL	0.079958	0.043742	-0.01222	0.019772	0.019815	0.023839	1					
TRY	0.083079	0.050826	0.1386	0.079311	0.02929	0.020597	0.155809	1				
SAR	0.049966	-0.03661	0.006641	0.023388	0.023787	0.005776	-0.00448	0.001609	1			
SEK	0.323925	0.339897	0.757527	0.570666	0.089006	0.045454	0.047069	0.168265	0.033232	1		
RUB	0.027055	-0.09489	-0.00287	0.019892	0.024119	0.005104	-0.00098	0.007695	0.265345	0.038458	1	
EUR	0.304459	0.279607	0.832632	0.62356	0.090383	0.045285	0.018273	0.139257	-0.0053	0.757844	0.019415	1

International Currency Correlation
Senior Capstone Project for Thomas Griffin

Weekly Correlation

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.718948	1										
CHF	0.808157	0.661654	1									
GBP	0.345708	-0.11495	0.030204	1								
HKD	0.113238	0.106644	0.281671	-0.20402	1							
CNY	0.711538	0.612245	0.923985	-0.21546	0.312399	1						
BRL	0.013199	0.001743	-0.19279	0.116663	0.378757	-0.21038	1					
TRY	-0.35002	-0.30362	-0.39205	0.004139	0.401493	-0.41538	0.815525	1				
SAR	0.162549	0.022355	0.010954	0.237092	-0.07673	-0.03994	0.016359	-0.04179	1			
SEK	0.849661	0.543493	0.692287	0.581718	0.181364	0.496003	0.238075	-0.02961	0.151723	1		
RUB	-0.25639	-0.29876	-0.34911	0.08283	0.377192	-0.38285	0.838643	0.91697	-0.02139	0.04007	1	
EUR	0.854563	0.526071	0.70183	0.569154	0.189467	0.519752	0.161727	-0.15391	0.136885	0.91896	-0.04019	1

Weekly (Price) Correlation-Recent (October 2006-October 2016)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.615285	1										
CHF	0.221512	0.43177	1									
GBP	0.38299	-0.31074	-0.44545	1								
HKD	-0.25417	0.134068	0.37597	-0.64725	1							
CNY	-0.0051	0.27765	0.848811	-0.64974	0.622556	1						
BRL	0.875122	0.581129	-0.04601	0.456424	-0.42193	-0.30511	1					
TRY	0.606526	0.140781	-0.54492	0.7404	-0.57792	-0.70814	0.815668	1				
SAR	0.226019	-0.02589	-0.11113	0.288966	-0.08484	-0.21621	0.171838	0.246037	1			
SEK	0.866089	0.359489	0.214154	0.590287	-0.37677	-0.05673	0.758077	0.595776	0.202488	1		
RUB	0.748502	0.300053	-0.33802	0.708633	-0.52715	-0.5265	0.868508	0.924777	0.211981	0.767002	1	
EUR	0.722079	0.30503	-0.08238	0.61959	-0.36535	-0.32006	0.842214	0.804721	0.19551	0.815146	0.860332	1

Weekly (Price) Correlation-Early (October 1996 -October 2006)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.372252	1										
CHF	0.788479	0.348593	1									
GBP	0.821957	0.405355	0.924196	1								
HKD	0.229582	-0.19701	0.214428	0.271453	1							
CNY	0.73403	0.032197	0.391965	0.443858	0.10629	1						
BRL	-0.11874	-0.33862	-0.16295	-0.07727	0.774835	-0.18035	1					
TRY	-0.10251	-0.22326	-0.05611	-0.06342	0.716196	-0.27826	0.906362	1				
SAR	0.21311	0.17066	0.169798	0.141022	-0.26557	0.153876	-0.33153	-0.22447	1			
SEK	0.718714	0.341794	0.862575	0.873624	0.528315	0.242479	0.261608	0.350988	0.058104	1		
RUB	-0.04008	-0.39146	-0.02813	0.000621	0.697129	-0.22034	0.892928	0.905803	-0.20139	0.34771	1	
EUR	0.767318	0.213258	0.917033	0.931669	0.479407	0.348544	0.158689	0.183414	0.054504	0.941933	0.267522	1

Weekly Correlation (price change)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	-0.00312	1										
CHF	0.284472	0.350315	1									
GBP	0.432032	0.114635	0.500227	1								
HKD	0.212242	0.087463	0.129118	0.139545	1							
CNY	0.154146	0.043832	0.133942	0.137324	0.1329	1						
BRL	0.406676	-0.05329	0.157802	0.285034	0.111172	0.097412	1					
TRY	0.255893	-0.01528	0.157075	0.215935	0.089753	0.073832	0.27372	1				
SAR	0.040554	0.029533	0.018869	0.022475	0.022	0.021686	0.048968	0.005919	1			
SEK	0.476145	0.214215	0.615144	0.563159	0.194122	0.130575	0.29637	0.28273	0.019449	1		
RUB	0.14454	-0.04891	0.033299	0.061969	-0.0105	0.068404	0.089685	0.062767	-0.00219	0.097597	1	
EUR	0.419344	0.234873	0.738518	0.611153	0.156416	0.157129	0.250101	0.247143	0.028578	0.790563	0.112808	1

Weekly (Price change) Correlation-Recent (October 2006-October 2016)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	-0.14747	1										
CHF	0.30301	0.312292	1									
GBP	0.531321	-0.05972	0.41153	1								
HKD	0.260916	-0.00841	0.125573	0.139698	1							
CNY	0.186478	0.045965	0.169159	0.189815	0.167403	1						
BRL	0.624543	-0.20025	0.275783	0.470296	0.182691	0.153413	1					
TRY	0.575421	-0.21808	0.211553	0.453092	0.205719	0.153336	0.646907	1				
SAR	0.027143	0.021516	0.037101	0.027764	0.011909	0.02111	0.062475	0.01165	1			
SEK	0.52409	0.108834	0.519293	0.530521	0.215504	0.169282	0.498185	0.484318	0.017278	1		
RUB	0.42119	0.01729	0.209247	0.268694	0.182041	0.187044	0.410631	0.36415	0.062362	0.379656	1	
EUR	0.467667	0.195969	0.66598	0.590182	0.157669	0.204028	0.424431	0.433191	0.038096	0.795309	0.355486	1

Weekly (Price change) Correlation-Recent (October 1996-October 2006)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.206852	1										
CHF	0.259835	0.400253	1									
GBP	0.248937	0.318227	0.636913	1								
HKD	0.118205	0.20835	0.136864	0.144151	1							
CNY	0.041802	0.056489	0.047579	0.001426	0.02905	1						
BRL	0.132328	0.06879	0.030188	0.084983	0.028036	-0.0034	1					
TRY	0.100199	0.071416	0.149065	0.11842	0.032366	0.025207	0.127888	1				
SAR	0.159144	0.094204	-0.03752	0.03267	0.100819	0.023094	0.044044	0.012542	1			
SEK	0.396535	0.338506	0.757975	0.614643	0.162424	0.033746	0.078365	0.212686	0.06417	1		
RUB	0.037888	-0.07761	-0.04113	-0.0188	-0.11132	0.012616	-0.01337	0.005673	-0.09732	-0.01156	1	
EUR	0.346068	0.280636	0.841412	0.642657	0.157871	0.057938	0.070915	0.181127	0.01796	0.785084	0.028804	1

Monthly Correlation

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.720287	1										
CHF	0.814212	0.667716	1									
GBP	0.356377	-0.1066	0.040097	1								
HKD	0.13526	0.120899	0.299167	-0.19044	1							
CNY	0.711686	0.61084	0.922729	-0.20647	0.326648	1						
BRL	0.011789	0.000273	-0.18612	0.115463	0.39479	-0.21036	1					
TRY	-0.34852	-0.30219	-0.38303	-4.4E-05	0.406591	-0.41312	0.812467	1				
SAR	0.157086	0.016541	-0.00065	0.260401	-0.08836	-0.05074	0.038993	-0.03046	1			
SEK	0.851525	0.551923	0.703266	0.580501	0.208206	0.498534	0.24147	-0.01993	0.157959	1		
RUB	-0.26144	-0.30095	-0.34541	0.083188	0.388149	-0.3863	0.843114	0.919086	-0.00831	0.043946	1	
EUR	0.856972	0.528597	0.70788	0.574654	0.212026	0.51914	0.162081	-0.15244	0.148639	0.918657	-0.04183	1

Monthly (Price) Correlation-Recent (October 2006-October 2016)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.623352	1										
CHF	0.251064	0.455304	1									
GBP	0.389938	-0.30484	-0.44157	1								
HKD	-0.24482	0.151171	0.380837	-0.6468	1							
CNY	-0.00689	0.27537	0.845713	-0.65145	0.631293	1						
BRL	0.872876	0.590031	-0.02099	0.455772	-0.41249	-0.30968	1					
TRY	0.602268	0.143387	-0.53224	0.738663	-0.57119	-0.712	0.814072	1				
SAR	0.237218	-0.02404	-0.12074	0.319922	-0.1127	-0.22736	0.188887	0.27499	1			
SEK	0.878822	0.381106	0.245875	0.584469	-0.3708	-0.0556	0.761898	0.586475	0.223602	1		
RUB	0.755155	0.304131	-0.3108	0.713599	-0.52407	-0.53044	0.872155	0.924041	0.245319	0.7714	1	
EUR	0.735697	0.314753	-0.05891	0.617794	-0.35679	-0.32507	0.848118	0.802139	0.225787	0.817711	0.866086	1

Monthly (Price) Correlation-Recent (October 1996-October 2006)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.365074	1										
CHF	0.789701	0.343198	1									
GBP	0.829231	0.388559	0.916019	1								
HKD	0.21441	-0.20653	0.212423	0.257642	1							
CNY	0.742064	0.031478	0.413863	0.491108	0.07446	1						
BRL	-0.12054	-0.34543	-0.15925	-0.08102	0.777737	-0.17918	1					
TRY	-0.11564	-0.22234	-0.04696	-0.0769	0.719189	-0.27932	0.901065	1				
SAR	0.150014	0.192607	0.184308	0.138662	-0.3909	0.05234	-0.39974	-0.28961	1			
SEK	0.718411	0.331655	0.869405	0.86816	0.524178	0.285135	0.259443	0.350263	0.026451	1		
RUB	-0.05675	-0.38939	-0.02093	-0.00446	0.709979	-0.2221	0.898584	0.908172	-0.26438	0.346442	1	
EUR	0.769928	0.207598	0.919707	0.931925	0.46855	0.383963	0.148473	0.168117	0.05607	0.938821	0.255579	1

Monthly Correlation (Price change)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.050214	1										
CHF	0.306587	0.355431	1									
GBP	0.436546	0.061808	0.465916	1								
HKD	0.241321	0.145417	0.215467	0.164177	1							
CNY	0.171074	0.016848	0.187158	0.126235	0.102422	1						
BRL	0.392456	0.035198	0.205564	0.204001	0.085597	0.09359	1					
TRY	0.411127	-0.03099	0.204795	0.195258	0.142861	0.131255	0.403734	1				
SAR	-0.04719	0.057346	-0.01109	0.061342	-0.07547	-0.03373	0.031737	-0.00158	1			
SEK	0.569169	0.21097	0.691652	0.599405	0.228163	0.194083	0.277609	0.359693	0.038958	1		
RUB	0.357538	-0.05656	0.142552	0.226701	0.081414	0.251976	0.230995	0.20673	0.0844	0.295333	1	
EUR	0.495305	0.182924	0.769257	0.592966	0.234309	0.193821	0.280512	0.304191	0.043551	0.829315	0.311285	1

Monthly (Price change) Correlation-Recent (October 2006-October 2016)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	-0.02272	1										
CHF	0.36024	0.301224	1									
GBP	0.566382	-0.12269	0.381056	1								
HKD	0.267416	0.149148	0.170642	0.127383	1							
CNY	0.228017	0.043248	0.260477	0.211342	0.143391	1						
BRL	0.638397	0.067578	0.489592	0.447428	0.128409	0.172827	1					
TRY	0.659514	-0.16196	0.314212	0.438962	0.187352	0.163237	0.671805	1				
SAR	-0.05528	0.092881	-0.00749	0.077852	-0.08568	-0.03554	0.046219	-0.00645	1			
SEK	0.64701	0.096883	0.626918	0.615069	0.178406	0.259738	0.608007	0.553014	0.047101	1		
RUB	0.561191	0.033358	0.34444	0.477418	0.134928	0.36374	0.492821	0.416368	0.126996	0.53182	1	
EUR	0.571583	0.112027	0.736948	0.568099	0.221257	0.260042	0.531105	0.531757	0.052358	0.852819	0.504791	1

Weekly (Price change) Correlation-Recent (October 1996-October 2006)

	CAD	YEN	CHF	GBP	HKD	CNY	BRL	TRY	SAR	SEK	RUB	EUR
CAD	1											
YEN	0.16327	1										
CHF	0.218211	0.420802	1									
GBP	0.185889	0.266186	0.603745	1								
HKD	0.194654	0.146483	0.286017	0.234457	1							
CNY	-0.04617	-0.05533	-0.03154	-0.09458	-0.053	1						
BRL	0.177789	0.014421	-0.02901	0.007759	0.051649	-0.01438	1					
TRY	0.240647	0.043475	0.119178	0.039615	0.107743	0.102924	0.273054	1				
SAR	-0.0083	-0.05401	-0.08849	0.029913	-0.1271	-0.0068	0.062619	0.027336	1			
SEK	0.426307	0.343561	0.790684	0.580818	0.312364	0.015125	0.000428	0.229859	0.040294	1		
RUB	0.086648	-0.13386	-0.08792	-0.04387	0.013199	0.047019	0.055279	0.060016	-0.03389	0.024631	1	
EUR	0.335457	0.276187	0.827955	0.635087	0.260676	-0.00101	0.066839	0.139771	0.033516	0.791847	0.082737	1

Correlation List (With Significance)

Highlighted Cells are Not Significant

Daily (Price)

Entire			Recent (October 2006-October 2016)			Recent (October 1996-October 2006)		
CNY	CHF	0.923826012	RUB	TRY	0.924659126	EUR	SEK	0.940930913
EUR	SEK	0.918466562	BRL	CAD	0.875386238	EUR	GBP	0.93072021
RUB	TRY	0.917464585	RUB	BRL	0.867481913	GBP	CHF	0.922511021
EUR	CAD	0.853704087	SEK	CAD	0.864546978	EUR	CHF	0.915679521
SEK	CAD	0.848863916	EUR	RUB	0.857069362	RUB	TRY	0.906234198
RUB	BRL	0.839874338	CNY	CHF	0.850696353	TRY	BRL	0.906017959
TRY	BRL	0.815772052	EUR	BRL	0.840740608	RUB	BRL	0.893944646
CHF	CAD	0.808797775	TRY	BRL	0.815043258	SEK	GBP	0.872513899
YEN	CAD	0.720116525	EUR	SEK	0.813690397	SEK	CHF	0.863014754
CNY	CAD	0.712261593	EUR	TRY	0.80259607	GBP	CAD	0.819066954
EUR	CHF	0.702348098	RUB	SEK	0.764342729	CHF	CAD	0.787812228
SEK	CHF	0.694019774	SEK	BRL	0.756305016	BRL	HKD	0.777065197
CHF	YEN	0.663373047	RUB	CAD	0.747908744	EUR	CAD	0.765111097
CNY	YEN	0.613102165	TRY	GBP	0.73962985	CNY	CAD	0.728568763
SEK	GBP	0.58074882	EUR	CAD	0.720836642	TRY	HKD	0.719374823
EUR	GBP	0.569460522	RUB	GBP	0.708560248	SEK	CAD	0.717577164
SEK	YEN	0.543320514	CNY	HKD	0.620529359	RUB	HKD	0.702229577
EUR	YEN	0.525348185	YEN	CAD	0.617745134	SEK	HKD	0.529380715
EUR	CNY	0.519463433	EUR	GBP	0.614881099	EUR	HKD	0.482301138
SEK	CNY	0.497230797	TRY	CAD	0.605679106	CNY	GBP	0.430114331
TRY	HKD	0.405113164	SEK	TRY	0.592379661	GBP	YEN	0.410005954
RUB	HKD	0.381791434	SEK	GBP	0.584748532	CNY	CHF	0.385904235
BRL	HKD	0.381469499	BRL	YEN	0.579609552	YEN	CAD	0.380727373
GBP	CAD	0.345187698	BRL	GBP	0.453082917	SEK	TRY	0.356024339
CNY	HKD	0.310044557	CHF	YEN	0.439360049	CHF	YEN	0.352846084
HKD	CHF	0.278574063	GBP	CAD	0.377382373	RUB	SEK	0.350387107
SEK	BRL	0.235298909	HKD	CHF	0.376079012	SEK	YEN	0.3457667
SAR	GBP	0.228017573	SEK	YEN	0.35872595	EUR	CNY	0.338407679
EUR	HKD	0.189585386	EUR	YEN	0.304060424	HKD	GBP	0.272617597
SEK	HKD	0.182446078	RUB	YEN	0.295565608	EUR	RUB	0.272133029
EUR	BRL	0.160336926	CNY	YEN	0.283887767	SEK	BRL	0.262227522
SAR	CAD	0.154785457	SAR	GBP	0.275897873	HKD	CAD	0.234822326
SEK	SAR	0.148826624	SAR	TRY	0.233187549	SEK	CNY	0.231526448
EUR	SAR	0.130020533	SAR	CAD	0.2245168	EUR	YEN	0.215372914
BRL	GBP	0.114397746	CHF	CAD	0.223254957	HKD	CHF	0.214824097
HKD	CAD	0.112087601	SEK	CHF	0.218104751	EUR	TRY	0.189087132
HKD	YEN	0.103199027	RUB	SAR	0.205546071	SAR	YEN	0.185012734
RUB	GBP	0.081936565	SEK	SAR	0.205122923	EUR	BRL	0.161255994
RUB	SEK	0.038926642	EUR	SAR	0.190884679	SAR	CHF	0.159209383
GBP	CHF	0.031058427	SAR	BRL	0.174199339	SAR	CAD	0.155290027
SAR	YEN	0.026888893	TRY	YEN	0.138001611	CNY	HKD	0.12003721
SAR	BRL	0.014849515	HKD	YEN	0.133161104	SAR	GBP	0.113013893
SAR	CHF	0.011873753	CNY	CAD	-0.000723079	SAR	CNY	0.053321393
BRL	CAD	0.011800923	SAR	YEN	-0.014781579	SEK	SAR	0.044146147
TRY	GBP	0.002749551	BRL	CHF	-0.043977645	CNY	YEN	0.04176386
BRL	YEN	-0.000294994	SEK	CNY	-0.049905895	EUR	SAR	0.039768981
RUB	SAR	-0.021977788	EUR	CHF	-0.077295613	RUB	GBP	0.004415665
SEK	TRY	-0.029248089	SAR	HKD	-0.077991829	RUB	CHF	-0.024877855
EUR	RUB	-0.040439353	SAR	CHF	-0.094706371	RUB	CAD	-0.034670271
SAR	TRY	-0.041008112	SAR	CNY	-0.200897693	TRY	CHF	-0.050245086
SAR	CNY	-0.041449692	HKD	CAD	-0.247755056	TRY	GBP	-0.059174129
SAR	HKD	-0.074051757	BRL	CNY	-0.301437556	BRL	GBP	-0.076907567
GBP	YEN	-0.115438436	EUR	CNY	-0.313269549	TRY	CAD	-0.094618223
EUR	TRY	-0.153204054	GBP	YEN	-0.315465341	BRL	CAD	-0.115950758
BRL	CHF	-0.194145561	RUB	CHF	-0.33763372	BRL	CHF	-0.161987287
HKD	GBP	-0.201964719	EUR	HKD	-0.355919525	BRL	CNY	-0.182897615
BRL	CNY	-0.211642883	SEK	HKD	-0.367251389	RUB	SAR	-0.194578009
CNY	GBP	-0.214094223	BRL	HKD	-0.417304921	HKD	YEN	-0.201637218
RUB	CAD	-0.257179904	GBP	CHF	-0.451633442	SAR	TRY	-0.208173519
RUB	YEN	-0.299500319	RUB	HKD	-0.521566104	RUB	CNY	-0.221752345
TRY	YEN	-0.303344079	RUB	CNY	-0.526198648	TRY	YEN	-0.223274238
TRY	CAD	-0.349458669	TRY	CHF	-0.544525969	SAR	HKD	-0.240564654
RUB	CHF	-0.349692102	TRY	HKD	-0.572700526	TRY	CNY	-0.27785727
RUB	CNY	-0.383713282	HKD	GBP	-0.639587964	SAR	BRL	-0.322302769
TRY	CHF	-0.391162191	CNY	GBP	-0.65111198	BRL	YEN	-0.340742336
TRY	CNY	-0.415001948	TRY	CNY	-0.705253855	RUB	YEN	-0.392272689

International Currency Correlation

Senior Capstone Project for Thomas Griffin

Daily (Price Change)

Entire			Recent (October 2006-October 2016)			Early (October 1996-October 2006)		
EUR	SEK	0.796953	EUR	SEK	0.823520045	EUR	CHF	0.832631991
EUR	CHF	0.749207	EUR	CHF	0.687698424	EUR	SEK	0.757843533
SEK	CHF	0.632661	EUR	GBP	0.614858184	SEK	CHF	0.757527201
EUR	GBP	0.617703	TRY	BRL	0.586357282	GBP	CHF	0.63187734
SEK	GBP	0.578633	SEK	GBP	0.583257059	EUR	GBP	0.62356003
GBP	CHF	0.492471	SEK	CAD	0.574016148	SEK	GBP	0.570666085
SEK	CAD	0.490424	SEK	CHF	0.552404132	CHF	YEN	0.39284124
EUR	CAD	0.434692	TRY	CAD	0.513154336	SEK	YEN	0.339897413
GBP	CAD	0.416629	EUR	CAD	0.511065947	SEK	CAD	0.323924982
CHF	YEN	0.368068	GBP	CAD	0.5095117	EUR	CAD	0.304459025
BRL	CAD	0.326085	BRL	CAD	0.497599483	GBP	YEN	0.301002926
TRY	BRL	0.324841	SEK	TRY	0.494181077	EUR	YEN	0.279606892
SEK	TRY	0.305715	SEK	BRL	0.440629043	RUB	SAR	0.265344654
CHF	CAD	0.286776	EUR	TRY	0.43848128	CHF	CAD	0.243931992
TRY	CAD	0.278931	TRY	GBP	0.418112054	GBP	CAD	0.236104414
SEK	BRL	0.269307	GBP	CHF	0.399298618	YEN	CAD	0.183350883
EUR	TRY	0.262506	BRL	GBP	0.378449652	SEK	TRY	0.168265425
EUR	YEN	0.239381	RUB	CAD	0.376504247	TRY	BRL	0.155808513
TRY	GBP	0.225291	RUB	BRL	0.365194499	EUR	TRY	0.139257065
BRL	GBP	0.220314	EUR	BRL	0.363313982	TRY	CHF	0.138599713
EUR	BRL	0.205164	CHF	YEN	0.347505677	HKD	YEN	0.129451824
SEK	YEN	0.187351	RUB	SEK	0.329629074	CNY	HKD	0.093216515
TRY	CHF	0.157715	RUB	TRY	0.327424018	EUR	HKD	0.090382676
RUB	CAD	0.152362	CHF	CAD	0.316452347	SEK	HKD	0.089005743
RUB	SEK	0.136914	EUR	RUB	0.304447602	HKD	GBP	0.084460391
GBP	YEN	0.131551	RUB	GBP	0.271561145	TRY	CAD	0.083079415
SEK	HKD	0.130535	RUB	CHF	0.217363736	BRL	CAD	0.079957745
CNY	HKD	0.128058	EUR	YEN	0.207066088	TRY	GBP	0.079310783
HKD	CAD	0.123951	TRY	CHF	0.193923616	CNY	YEN	0.074166702
CNY	GBP	0.118742	BRL	CHF	0.18552195	HKD	CHF	0.064514947
EUR	HKD	0.117132	RUB	HKD	0.155693477	HKD	CAD	0.063004622
EUR	RUB	0.113942	HKD	CAD	0.155262412	TRY	YEN	0.05082647
RUB	BRL	0.113589	SEK	HKD	0.154715361	SAR	CAD	0.04996636
HKD	GBP	0.110136	CNY	GBP	0.147548498	CNY	GBP	0.04842026
RUB	GBP	0.105542	CNY	HKD	0.145108295	SEK	BRL	0.047069443
SEK	CNY	0.100728	BRL	HKD	0.139832549	SEK	CNY	0.045454011
EUR	CNY	0.098988	EUR	HKD	0.134721657	EUR	CNY	0.045284777
BRL	CHF	0.092721	HKD	GBP	0.125725898	CNY	CHF	0.043820884
RUB	SAR	0.091171	EUR	CNY	0.124429808	BRL	YEN	0.043741775
CNY	CAD	0.089959	SEK	CNY	0.122304285	RUB	SEK	0.038458314
RUB	TRY	0.08714	RUB	CNY	0.112574058	SEK	SAR	0.033231676
BRL	HKD	0.087062	CNY	CAD	0.108906267	TRY	HKD	0.029290426
CNY	CHF	0.079902	TRY	HKD	0.104489334	CNY	CAD	0.028129668
HKD	CHF	0.073277	BRL	CNY	0.10159232	RUB	CAD	0.027054639
BRL	CNY	0.073185	CNY	CHF	0.099136445	RUB	HKD	0.02411947
RUB	CHF	0.07012	SAR	BRL	0.098972797	BRL	CNY	0.023839355
RUB	HKD	0.067657	TRY	CNY	0.093264086	SAR	HKD	0.023786891
SAR	BRL	0.064888	HKD	CHF	0.079380728	SAR	GBP	0.023387509
HKD	YEN	0.063243	SEK	YEN	0.073729163	TRY	CNY	0.020596997
TRY	HKD	0.061656	SAR	HKD	0.055252941	RUB	GBP	0.019892138
TRY	CNY	0.056019	SAR	CNY	0.032495697	BRL	HKD	0.019814669
RUB	CNY	0.047836	CNY	YEN	0.030251296	BRL	GBP	0.019771832
SAR	HKD	0.046081	SAR	CAD	0.028265978	EUR	RUB	0.019415481
CNY	YEN	0.039685	RUB	SAR	0.024536079	EUR	BRL	0.018272558
SAR	CAD	0.031554	SAR	TRY	0.022258828	RUB	TRY	0.007694996
SAR	CNY	0.029046	HKD	YEN	0.012159952	SAR	CHF	0.006640728
YEN	CAD	0.015637	SAR	GBP	0.007368912	SAR	CNY	0.005775602
SAR	TRY	0.012252	GBP	YEN	0.000154147	RUB	CNY	0.005104049
SAR	GBP	0.010376	SAR	YEN	-0.001209466	SAR	TRY	0.001609411
SEK	SAR	0.000776	SEK	SAR	-0.008022469	RUB	BRL	-0.000976179
EUR	SAR	-0.00841	EUR	SAR	-0.010109372	RUB	CHF	-0.002866417
SAR	YEN	-0.00967	SAR	CHF	-0.016034775	SAR	BRL	-0.00447589
SAR	CHF	-0.00976	RUB	YEN	-0.03413818	EUR	SAR	-0.005298389
TRY	YEN	-0.05255	YEN	CAD	-0.09521462	BRL	CHF	-0.012215035
BRL	YEN	-0.0589	BRL	YEN	-0.163180314	SAR	YEN	-0.036606711
RUB	YEN	-0.07134	TRY	YEN	-0.209892062	RUB	YEN	-0.094887723

International Currency Correlation

Senior Capstone Project for Thomas Griffin

Weekly (Price)

Entire			Recent (October 2006-October 2016)			Early (October 1996-October 2006)		
CNY	CHF	0.923985	RUB	TRY	0.924777191	EUR	SEK	0.941932743
EUR	SEK	0.91896	BRL	CAD	0.875121921	EUR	GBP	0.931669348
RUB	TRY	0.91697	RUB	BRL	0.868507996	GBP	CHF	0.924195933
EUR	CAD	0.854563	SEK	CAD	0.866088668	EUR	CHF	0.91703322
SEK	CAD	0.849661	EUR	RUB	0.860331642	TRY	BRL	0.906362133
RUB	BRL	0.838643	CNY	CHF	0.848811333	RUB	TRY	0.905803469
TRY	BRL	0.815525	EUR	BRL	0.842214415	RUB	BRL	0.892927708
CHF	CAD	0.808157	TRY	BRL	0.815668126	SEK	GBP	0.873623934
YEN	CAD	0.718948	EUR	SEK	0.815145707	SEK	CHF	0.862574856
CNY	CAD	0.711538	EUR	TRY	0.804721405	GBP	CAD	0.821957439
EUR	CHF	0.70183	RUB	SEK	0.767001604	CHF	CAD	0.788478599
SEK	CHF	0.692287	SEK	BRL	0.758076661	BRL	HKD	0.774835462
CHF	YEN	0.661654	RUB	CAD	0.748502257	EUR	CAD	0.767317815
CNY	YEN	0.612245	TRY	GBP	0.740400052	CNY	CAD	0.734029702
SEK	GBP	0.581718	EUR	CAD	0.722078505	SEK	CAD	0.718714006
EUR	GBP	0.569154	RUB	GBP	0.708633348	TRY	HKD	0.716195734
SEK	YEN	0.543493	CNY	HKD	0.62255629	RUB	HKD	0.697129497
EUR	YEN	0.526071	EUR	GBP	0.619590497	SEK	HKD	0.52831507
EUR	CNY	0.519752	YEN	CAD	0.61528528	EUR	HKD	0.47940695
SEK	CNY	0.496003	TRY	CAD	0.606525753	CNY	GBP	0.443858181
TRY	HKD	0.401493	SEK	TRY	0.595776375	GBP	YEN	0.405354712
BRL	HKD	0.378757	SEK	GBP	0.590287029	CNY	CHF	0.391964695
RUB	HKD	0.377192	BRL	YEN	0.581128828	YEN	CAD	0.372251785
GBP	CAD	0.345708	BRL	GBP	0.456424375	SEK	TRY	0.350987532
CNY	HKD	0.312399	CHF	YEN	0.431770241	CHF	YEN	0.348592993
HKD	CHF	0.281671	GBP	CAD	0.382990067	EUR	CNY	0.348544129
SEK	BRL	0.238075	HKD	CHF	0.375970103	RUB	SEK	0.347710203
SAR	GBP	0.237092	SEK	YEN	0.359489392	SEK	YEN	0.341794152
EUR	HKD	0.189467	EUR	YEN	0.305030233	HKD	GBP	0.271453092
SEK	HKD	0.181364	RUB	YEN	0.300053395	EUR	RUB	0.267521516
SAR	CAD	0.162549	SAR	GBP	0.288965893	SEK	BRL	0.261608244
EUR	BRL	0.161727	CNY	YEN	0.277649704	SEK	CNY	0.242478983
SEK	SAR	0.151723	SAR	TRY	0.246036938	HKD	CAD	0.229581722
EUR	SAR	0.136885	SAR	CAD	0.226019497	HKD	CHF	0.214427615
BRL	GBP	0.116663	CHF	CAD	0.221512362	EUR	YEN	0.21325815
HKD	CAD	0.113238	SEK	CHF	0.214153846	SAR	CAD	0.213110001
HKD	YEN	0.106644	RUB	SAR	0.211980532	EUR	TRY	0.183414068
RUB	GBP	0.08283	SEK	SAR	0.202487704	SAR	YEN	0.170660251
RUB	SEK	0.04007	EUR	SAR	0.195510136	SAR	CHF	0.169798209
GBP	CHF	0.030204	SAR	BRL	0.171838386	EUR	BRL	0.158688879
SAR	YEN	0.022355	TRY	YEN	0.140781414	SAR	CNY	0.153875792
SAR	BRL	0.016359	HKD	YEN	0.134068433	SAR	GBP	0.141021951
BRL	CAD	0.013199	CNY	CAD	-0.005097902	CNY	HKD	0.106290315
SAR	CHF	0.010954	SAR	YEN	-0.025891473	SEK	SAR	0.058103642
TRY	GBP	0.004139	BRL	CHF	-0.046005854	EUR	SAR	0.054504153
BRL	YEN	0.001743	SEK	CNY	-0.056727496	CNY	YEN	0.032196559
RUB	SAR	-0.02139	EUR	CHF	-0.082381424	RUB	GBP	0.00062097
SEK	TRY	-0.02961	SAR	HKD	-0.084835323	RUB	CHF	-0.02813467
SAR	CNY	-0.03994	SAR	CHF	-0.111133201	RUB	CAD	-0.04008068
EUR	RUB	-0.04019	SAR	CNY	-0.216209346	TRY	CHF	-0.05611164
SAR	TRY	-0.04179	HKD	CAD	-0.254171225	TRY	GBP	-0.06342195
SAR	HKD	-0.07673	BRL	CNY	-0.305108918	BRL	GBP	-0.07727099
GBP	YEN	-0.11495	GBP	YEN	-0.310740959	TRY	CAD	-0.10251433
EUR	TRY	-0.15391	EUR	CNY	-0.320060576	BRL	CAD	-0.11874043
BRL	CHF	-0.19279	RUB	CHF	-0.338015298	BRL	CHF	-0.16295248
HKD	GBP	-0.20402	EUR	HKD	-0.365353972	BRL	CNY	-0.18034502
BRL	CNY	-0.21038	SEK	HKD	-0.376770327	HKD	YEN	-0.19700612
CNY	GBP	-0.21546	BRL	HKD	-0.421932973	RUB	SAR	-0.20138596
RUB	CAD	-0.25639	GBP	CHF	-0.445452316	RUB	CNY	-0.22033563
RUB	YEN	-0.29876	RUB	CNY	-0.526495979	TRY	YEN	-0.22326243
TRY	YEN	-0.30362	RUB	HKD	-0.527146048	SAR	TRY	-0.22447225
RUB	CHF	-0.34911	TRY	CHF	-0.544916529	SAR	HKD	-0.26556548
TRY	CAD	-0.35002	TRY	HKD	-0.577920169	TRY	CNY	-0.27826365
RUB	CNY	-0.38285	HKD	GBP	-0.647251961	SAR	BRL	-0.33153402
TRY	CHF	-0.39205	CNY	GBP	-0.649743906	BRL	YEN	-0.33861662
TRY	CNY	-0.41538	TRY	CNY	-0.708142319	RUB	YEN	-0.39145811

International Currency Correlation

Senior Capstone Project for Thomas Griffin

Weekly (Price Change)

Entire			Recent (October 2006-October 2016)			Early (October 1996-October 2006)		
EUR	SEK	0.790563	EUR	SEK	0.795308714	EUR	CHF	0.841412473
EUR	CHF	0.738518	EUR	CHF	0.665980151	EUR	SEK	0.785084203
SEK	CHF	0.615144	TRY	BRL	0.64690721	SEK	CHF	0.757975016
EUR	GBP	0.611153	BRL	CAD	0.624542753	EUR	GBP	0.642657283
SEK	GBP	0.563159	EUR	GBP	0.590182195	GBP	CHF	0.636912695
GBP	CHF	0.500227	TRY	CAD	0.575421107	SEK	GBP	0.61464344
SEK	CAD	0.476145	GBP	CAD	0.531320713	CHF	YEN	0.400253289
GBP	CAD	0.432032	SEK	GBP	0.530520641	SEK	CAD	0.396535222
EUR	CAD	0.419344	SEK	CAD	0.52409007	EUR	CAD	0.346068096
BRL	CAD	0.406676	SEK	CHF	0.519293358	SEK	YEN	0.338505624
CHF	YEN	0.350315	SEK	BRL	0.498185106	GBP	YEN	0.318226614
SEK	BRL	0.29637	SEK	TRY	0.484318214	EUR	YEN	0.28063614
BRL	GBP	0.285034	BRL	GBP	0.470296456	CHF	CAD	0.259834589
CHF	CAD	0.284472	EUR	CAD	0.467666711	GBP	CAD	0.248936972
SEK	TRY	0.28273	TRY	GBP	0.453091656	SEK	TRY	0.212686067
TRY	BRL	0.27372	EUR	TRY	0.433191382	HKD	YEN	0.208349848
TRY	CAD	0.255893	EUR	BRL	0.424431369	YEN	CAD	0.206852342
EUR	BRL	0.250101	RUB	CAD	0.421190442	EUR	TRY	0.181127466
EUR	TRY	0.247143	GBP	CHF	0.411530391	SEK	HKD	0.16242444
EUR	YEN	0.234873	RUB	BRL	0.410630548	SAR	CAD	0.159143633
TRY	GBP	0.215935	RUB	SEK	0.379656153	EUR	HKD	0.157871385
SEK	YEN	0.214215	RUB	TRY	0.364150463	TRY	CHF	0.149064728
HKD	CAD	0.212242	EUR	RUB	0.355486298	HKD	GBP	0.144151285
SEK	HKD	0.194122	CHF	YEN	0.312292409	HKD	CHF	0.136863972
BRL	CHF	0.157802	CHF	CAD	0.303010245	BRL	CAD	0.1323275
EUR	CNY	0.157129	BRL	CHF	0.275783266	TRY	BRL	0.127888241
TRY	CHF	0.157075	RUB	GBP	0.268694122	TRY	GBP	0.118420302
EUR	HKD	0.156416	HKD	CAD	0.260915585	HKD	CAD	0.118204633
CNY	CAD	0.154146	SEK	HKD	0.215504101	SAR	HKD	0.100819029
RUB	CAD	0.14454	TRY	CHF	0.211552652	TRY	CAD	0.10019947
HKD	GBP	0.139545	RUB	CHF	0.209246636	SAR	YEN	0.094203788
CNY	GBP	0.137324	TRY	HKD	0.205718519	BRL	GBP	0.08498346
CNY	CHF	0.133942	EUR	CNY	0.204028491	SEK	BRL	0.078364769
CNY	HKD	0.1329	EUR	YEN	0.195969199	TRY	YEN	0.071415579
SEK	CNY	0.130575	CNY	GBP	0.189815034	EUR	BRL	0.070915498
HKD	CHF	0.129118	RUB	CNY	0.187044313	BRL	YEN	0.068789905
GBP	YEN	0.114635	CNY	CAD	0.186477687	SEK	SAR	0.064170458
EUR	RUB	0.112808	BRL	HKD	0.182690981	EUR	CNY	0.057938367
BRL	HKD	0.111172	RUB	HKD	0.182040874	CNY	YEN	0.056489406
RUB	SEK	0.097597	SEK	CNY	0.169282413	CNY	CHF	0.047578605
BRL	CNY	0.097412	CNY	CHF	0.169159454	SAR	BRL	0.044043594
TRY	HKD	0.089753	CNY	HKD	0.167402539	CNY	CAD	0.04180231
RUB	BRL	0.089685	EUR	HKD	0.157668963	RUB	CAD	0.037888383
HKD	YEN	0.087463	BRL	CNY	0.153412757	SEK	CNY	0.033745574
TRY	CNY	0.073832	TRY	CNY	0.153336435	SAR	GBP	0.032669961
RUB	CNY	0.068404	HKD	GBP	0.139697676	TRY	HKD	0.032366294
RUB	TRY	0.062767	HKD	CHF	0.125572516	BRL	CHF	0.030188254
RUB	GBP	0.061969	SEK	YEN	0.108833797	CNY	HKD	0.029049811
SAR	BRL	0.048968	SAR	BRL	0.062474622	EUR	RUB	0.028803723
CNY	YEN	0.043832	RUB	SAR	0.062361807	BRL	HKD	0.028035929
SAR	CAD	0.040554	CNY	YEN	0.045965469	TRY	CNY	0.025206659
RUB	CHF	0.033299	EUR	SAR	0.038096038	SAR	CNY	0.023093866
SAR	YEN	0.029533	SAR	CHF	0.037100931	EUR	SAR	0.017960111
EUR	SAR	0.028578	SAR	GBP	0.027764255	RUB	CNY	0.012616179
SAR	GBP	0.022475	SAR	CAD	0.027143295	SAR	TRY	0.012541961
SAR	HKD	0.022	SAR	YEN	0.021515564	RUB	TRY	0.005672515
SAR	CNY	0.021686	SAR	CNY	0.021109969	CNY	GBP	0.001425769
SEK	SAR	0.019449	RUB	YEN	0.017290133	BRL	CNY	-0.0033982
SAR	CHF	0.018869	SEK	SAR	0.017277983	RUB	SEK	-0.01155606
SAR	TRY	0.005919	SAR	HKD	0.011908571	RUB	BRL	-0.01336819
RUB	SAR	-0.00219	SAR	TRY	0.0116497	RUB	GBP	-0.01879984
YEN	CAD	-0.00312	HKD	YEN	-0.008407689	SAR	CHF	-0.03752324
RUB	HKD	-0.0105	GBP	YEN	-0.059717156	RUB	CHF	-0.04112977
TRY	YEN	-0.01528	YEN	CAD	-0.147474856	RUB	YEN	-0.0776111
RUB	YEN	-0.04891	BRL	YEN	-0.200247844	RUB	SAR	-0.09731964
BRL	YEN	-0.05329	TRY	YEN	-0.218080655	RUB	HKD	-0.11131528

International Currency Correlation

Senior Capstone Project for Thomas Griffin

Monthly (Price)

Entire			Recent (October 2006- October 2016)			Early (October 1996-October 2006)		
CNY	CHF	0.922729	RUB	TRY	0.924041222	EUR	SEK	0.938821301
RUB	TRY	0.919086	SEK	CAD	0.878822093	EUR	GBP	0.931925401
EUR	SEK	0.918657	BRL	CAD	0.872876073	EUR	CHF	0.919706919
EUR	CAD	0.856972	RUB	BRL	0.872155481	GBP	CHF	0.916019178
SEK	CAD	0.851525	EUR	RUB	0.866085585	RUB	TRY	0.908171975
RUB	BRL	0.843114	EUR	BRL	0.848118151	TRY	BRL	0.90106509
CHF	CAD	0.814212	CNY	CHF	0.845712816	RUB	BRL	0.898583989
TRY	BRL	0.812467	EUR	SEK	0.817711317	SEK	CHF	0.869404661
YEN	CAD	0.720287	TRY	BRL	0.814071612	SEK	GBP	0.868159796
CNY	CAD	0.711686	EUR	TRY	0.802138708	GBP	CAD	0.829230833
EUR	CHF	0.70788	RUB	SEK	0.771400066	CHF	CAD	0.789700621
SEK	CHF	0.703266	SEK	BRL	0.761898475	BRL	HKD	0.777736721
CHF	YEN	0.667716	RUB	CAD	0.755154959	EUR	CAD	0.769927829
CNY	YEN	0.61084	TRY	GBP	0.738662645	CNY	CAD	0.742064082
SEK	GBP	0.580501	EUR	CAD	0.735696786	TRY	HKD	0.71918946
EUR	GBP	0.574654	RUB	GBP	0.713599214	SEK	CAD	0.718410818
SEK	YEN	0.551923	CNY	HKD	0.631292704	RUB	HKD	0.709978579
EUR	YEN	0.528597	YEN	CAD	0.623351659	SEK	HKD	0.524177947
EUR	CNY	0.51914	EUR	GBP	0.617793758	CNY	GBP	0.491107989
SEK	CNY	0.498534	TRY	CAD	0.602267535	EUR	HKD	0.468549567
TRY	HKD	0.406591	BRL	YEN	0.590031056	CNY	CHF	0.413862887
BRL	HKD	0.39479	SEK	TRY	0.586475195	GBP	YEN	0.388558764
RUB	HKD	0.388149	SEK	GBP	0.584469374	EUR	CNY	0.383963316
GBP	CAD	0.356377	BRL	GBP	0.455772269	YEN	CAD	0.365074004
CNY	HKD	0.326648	CHF	YEN	0.455304267	SEK	TRY	0.350262702
HKD	CHF	0.299167	GBP	CAD	0.389937574	RUB	SEK	0.346441751
SAR	GBP	0.260401	SEK	YEN	0.381105665	CHF	YEN	0.343198437
SEK	BRL	0.24147	HKD	CHF	0.380836879	SEK	YEN	0.331655489
EUR	HKD	0.212026	SAR	GBP	0.319921908	SEK	CNY	0.285135476
SEK	HKD	0.208206	EUR	YEN	0.314752708	SEK	BRL	0.259443121
EUR	BRL	0.162081	RUB	YEN	0.304130984	HKD	GBP	0.257642318
SEK	SAR	0.157959	CNY	YEN	0.275370094	EUR	RUB	0.255578837
SAR	CAD	0.157086	SAR	TRY	0.274989926	HKD	CAD	0.214410293
EUR	SAR	0.148639	CHF	CAD	0.251064062	HKD	CHF	0.212423242
HKD	CAD	0.13526	SEK	CHF	0.245874805	EUR	YEN	0.207597583
HKD	YEN	0.120899	RUB	SAR	0.245318749	SAR	YEN	0.192606687
BRL	GBP	0.115463	SAR	CAD	0.237218209	SAR	CHF	0.184307905
RUB	GBP	0.083188	EUR	SAR	0.225787261	EUR	TRY	0.16811661
RUB	SEK	0.043946	SEK	SAR	0.223601521	SAR	CAD	0.150013931
GBP	CHF	0.040097	SAR	BRL	0.188886999	EUR	BRL	0.148473038
SAR	BRL	0.038993	HKD	YEN	0.151170811	SAR	GBP	0.138662269
SAR	YEN	0.016541	TRY	YEN	0.143387113	CNY	HKD	0.074460082
BRL	CAD	0.011789	CNY	CAD	-0.006890834	EUR	SAR	0.056070052
BRL	YEN	0.000273	BRL	CHF	-0.020990602	SAR	CNY	0.05234017
TRY	GBP	-4.4E-05	SAR	YEN	-0.024043097	CNY	YEN	0.03147756
SAR	CHF	-0.00065	SEK	CNY	-0.055603824	SEK	SAR	0.026451115
RUB	SAR	-0.00831	EUR	CHF	-0.058913775	RUB	GBP	-0.00446393
SEK	TRY	-0.01993	SAR	HKD	-0.112699856	RUB	CHF	-0.02093125
SAR	TRY	-0.03046	SAR	CHF	-0.120735254	TRY	CHF	-0.04696146
EUR	RUB	-0.04183	SAR	CNY	-0.227361263	RUB	CAD	-0.05674636
SAR	CNY	-0.05074	HKD	CAD	-0.244821583	TRY	GBP	-0.0768979
SAR	HKD	-0.08836	GBP	YEN	-0.304843136	BRL	GBP	-0.08102146
GBP	YEN	-0.1066	BRL	CNY	-0.309680905	TRY	CAD	-0.11563831
EUR	TRY	-0.15244	RUB	CHF	-0.310802445	BRL	CAD	-0.12054212
BRL	CHF	-0.18612	EUR	CNY	-0.325065523	BRL	CHF	-0.15925062
HKD	GBP	-0.19044	EUR	HKD	-0.356791745	BRL	CNY	-0.17918429
CNY	GBP	-0.20647	SEK	HKD	-0.370796284	HKD	YEN	-0.2065265
BRL	CNY	-0.21036	BRL	HKD	-0.412491861	RUB	CNY	-0.22209512
RUB	CAD	-0.26144	GBP	CHF	-0.441570848	TRY	YEN	-0.22233636
RUB	YEN	-0.30095	RUB	HKD	-0.52406973	RUB	SAR	-0.26437861
TRY	YEN	-0.30219	RUB	CNY	-0.530437303	TRY	CNY	-0.27932308
RUB	CHF	-0.34541	TRY	CHF	-0.532240137	SAR	TRY	-0.28961246
TRY	CAD	-0.34852	TRY	HKD	-0.571191701	BRL	YEN	-0.34542813
TRY	CHF	-0.38303	HKD	GBP	-0.646804581	RUB	YEN	-0.38938978
RUB	CNY	-0.3863	CNY	GBP	-0.65144997	SAR	HKD	-0.39089538
TRY	CNY	-0.41312	TRY	CNY	-0.711997678	SAR	BRL	-0.39973669

International Currency Correlation

Senior Capstone Project for Thomas Griffin

Monthly (Price Change)

Entire			Recent (October 2006- October 2016)			Early (October 1996-October 2006)		
EUR	SEK	0.829315	EUR	SEK	0.852818717	EUR	CHF	0.827954914
EUR	CHF	0.769257	EUR	CHF	0.736947743	EUR	SEK	0.791846622
SEK	CHF	0.691652	TRY	BRL	0.671804984	SEK	CHF	0.790684015
SEK	GBP	0.599405	TRY	CAD	0.659514282	EUR	GBP	0.635086558
EUR	GBP	0.592966	SEK	CAD	0.647009548	GBP	CHF	0.603745171
SEK	CAD	0.569169	BRL	CAD	0.638397297	SEK	GBP	0.580818473
EUR	CAD	0.495305	SEK	CHF	0.626917936	SEK	CAD	0.426307463
GBP	CHF	0.465916	SEK	GBP	0.61506949	CHF	YEN	0.420802496
GBP	CAD	0.436546	SEK	BRL	0.608006999	SEK	YEN	0.343561375
TRY	CAD	0.411127	EUR	CAD	0.571582736	EUR	CAD	0.335457242
TRY	BRL	0.403734	EUR	GBP	0.568098951	SEK	HKD	0.312364372
BRL	CAD	0.392456	GBP	CAD	0.566381957	HKD	CHF	0.286016942
SEK	TRY	0.359693	RUB	CAD	0.561191098	EUR	YEN	0.276187312
RUB	CAD	0.357538	SEK	TRY	0.553013824	TRY	BRL	0.273053714
CHF	YEN	0.355431	RUB	SEK	0.531819571	GBP	YEN	0.266186009
EUR	RUB	0.311285	EUR	TRY	0.531756638	EUR	HKD	0.260676489
CHF	CAD	0.306587	EUR	BRL	0.531105173	TRY	CAD	0.240647402
EUR	TRY	0.304191	EUR	RUB	0.504790561	HKD	GBP	0.234456583
RUB	SEK	0.295333	RUB	BRL	0.492821331	SEK	TRY	0.229858537
EUR	BRL	0.280512	BRL	CHF	0.489592074	CHF	CAD	0.218210978
SEK	BRL	0.277609	RUB	GBP	0.477418413	HKD	CAD	0.194653546
RUB	CNY	0.251976	BRL	GBP	0.447427873	GBP	CAD	0.18588912
HKD	CAD	0.241321	TRY	GBP	0.438961968	BRL	CAD	0.177788681
EUR	HKD	0.234309	RUB	TRY	0.416368082	YEN	CAD	0.163269664
RUB	BRL	0.230995	GBP	CHF	0.381056463	HKD	YEN	0.14648319
SEK	HKD	0.228163	RUB	CNY	0.363740411	EUR	TRY	0.139771124
RUB	GBP	0.226701	CHF	CAD	0.360240496	TRY	CHF	0.119177684
HKD	CHF	0.215467	RUB	CHF	0.344439903	TRY	HKD	0.107742656
SEK	YEN	0.21097	TRY	CHF	0.31421204	TRY	CNY	0.102923992
RUB	TRY	0.20673	CHF	YEN	0.301223699	RUB	CAD	0.086648468
BRL	CHF	0.205564	HKD	CAD	0.267416297	EUR	RUB	0.082736992
TRY	CHF	0.204795	CNY	CHF	0.260476927	EUR	BRL	0.066838979
BRL	GBP	0.204001	EUR	CNY	0.26004232	SAR	BRL	0.062618757
TRY	GBP	0.195258	SEK	CNY	0.259738005	RUB	TRY	0.06001632
SEK	CNY	0.194083	CNY	CAD	0.228016755	RUB	BRL	0.055278837
EUR	CNY	0.193821	EUR	HKD	0.221257033	BRL	HKD	0.051649479
CNY	CHF	0.187158	CNY	GBP	0.211342236	RUB	CNY	0.047018746
EUR	YEN	0.182924	TRY	HKD	0.18735162	TRY	YEN	0.04347523
CNY	CAD	0.171074	SEK	HKD	0.178405667	SEK	SAR	0.040294468
HKD	GBP	0.164177	BRL	CNY	0.17282686	TRY	GBP	0.039615114
HKD	YEN	0.145417	HKD	CHF	0.170642435	EUR	SAR	0.033515613
TRY	HKD	0.142861	TRY	CNY	0.163236705	SAR	GBP	0.029913196
RUB	CHF	0.142552	HKD	YEN	0.149148478	SAR	TRY	0.027336213
TRY	CNY	0.131255	CNY	HKD	0.143391471	RUB	SEK	0.024630686
CNY	GBP	0.126235	RUB	HKD	0.13492836	SEK	CNY	0.015124701
CNY	HKD	0.102422	BRL	HKD	0.128408691	BRL	YEN	0.014420708
BRL	CNY	0.09359	HKD	GBP	0.127383361	RUB	HKD	0.013198859
BRL	HKD	0.085597	RUB	SAR	0.126996172	BRL	GBP	0.007758872
RUB	SAR	0.0844	EUR	YEN	0.112027494	SEK	BRL	0.000427549
RUB	HKD	0.081414	SEK	YEN	0.096883482	EUR	CNY	-0.001006916
GBP	YEN	0.061808	SAR	YEN	0.092880584	SAR	CNY	-0.006799128
SAR	GBP	0.061342	SAR	GBP	0.077851736	SAR	CAD	-0.00829688
SAR	YEN	0.057346	BRL	YEN	0.067578059	BRL	CNY	-0.014378721
YEN	CAD	0.050214	EUR	SAR	0.052357573	BRL	CHF	-0.029013634
EUR	SAR	0.043551	SEK	SAR	0.047100729	CNY	CHF	-0.031539973
SEK	SAR	0.038958	SAR	BRL	0.046218995	RUB	SAR	-0.033892672
BRL	YEN	0.035198	CNY	YEN	0.043247553	RUB	GBP	-0.043868944
SAR	BRL	0.031737	RUB	YEN	0.033358157	CNY	CAD	-0.046170003
CNY	YEN	0.016848	SAR	TRY	-0.00645122	CNY	HKD	-0.053002523
SAR	TRY	-0.00158	SAR	CHF	-0.007489258	SAR	YEN	-0.054011381
SAR	CHF	-0.01109	YEN	CAD	-0.02271697	CNY	YEN	-0.055329023
TRY	YEN	-0.03099	SAR	CNY	-0.035537618	RUB	CHF	-0.087919063
SAR	CNY	-0.03373	SAR	CAD	-0.055280812	SAR	CHF	-0.088485806
SAR	CAD	-0.04719	SAR	HKD	-0.085678467	CNY	GBP	-0.094583112
RUB	YEN	-0.05656	GBP	YEN	-0.122691138	SAR	HKD	-0.127102533
SAR	HKD	-0.07547	TRY	YEN	-0.161964726	RUB	YEN	-0.133858368

REFERENCES

Alexius, A., 2000. UIP for short investments in long-term bonds. Sveriges Riksbank Working Paper Series, 115

(n.d.). Retrieved September 18, 2016, from http://www.merriam-webster.com/dictionary/globalization

Agenor, P., & Masson, P. R. (99, February). Credibility, Reputation, and the Mexican Peso Crisis. *Journal of Money, Credit & Banking, 31*(1), 70-84. Retrieved September 17, 2016.

Backus, David K., Silverto Foresi, and Chris I. Telmer. "Affine Term Structure Models And The Forward Premium Anomaly."*Journal Of Finance* 56.1 (2001): 279. *Publisher Provided Full Text Searching File*. Web. 26 Apr. 2016.

Backus, D., Foresi, S., Telmer, C., 1995. Interpreting the forward premium anomaly. Canadian Journal of Economics 28, S108–S119

Bekaert, Geert. “The Time Variation of Risk and Return in Foreign Exchange Markets: A General Equilibrium Perspective”. *The Review of Financial Studies* 9.2 (1996): 427–470. Web.

Burnside, C., Eichenbaum, M. S., & Rebelo, S. (2007, July). Understanding the Forward Premium Puzzle: A Micro structure Approach. Retrieved September 17, 2016, from http://www.nber.org/papers/w13278.pdf

By the early 1960s, the U.S. dollar's fixed value against gold, under the Bretton Woods system of fixed exchange rates, was seen as overvalued. A sizable increase in domestic spending on President Lyndon Johnson's Great Society programs and a rise in military spending caused by the Vietnam War gradually worsened the overvaluation of the dollar. (n.d.). About the IMF: History: The end of the Bretton Woods System (1972–81). Retrieved September 18, 2016, from https://www.imf.org/external/about/histend.htm

Correlation. (n.d.). Retrieved April 07, 2017, from

http://www.dictionary.com/browse/correlation

CHINN, MENZIE D., and Menzie D. Chinn. "Forward Premium Puzzle." *The Princeton Encyclopedia of the World Economy*. Eds. Kenneth A. Reinert and Ramkishen S. Rajan. Princeton: Princeton University Press, 2010. *Credo Reference.* Web. 29 Apr. 2016.

Craig Burnside & Martin Eichenbaum & Sergio Rebelo, 2009. "Understanding the Forward Premium Puzzle: A Microstructure Approach," American Economic Journal: Macroeconomics, American Economic Association, vol. 1(2), pages 127-54, July.

Dooley, Michael, and Jeffrey Shafer, "Analysis of Short-Run Exchange Rate Behavior: March, 1973 to September, 1975," International Finance Discussion Paper No. 123, Board of Governors of the Federal Reserve, 1976.

Eugene F. Fama - Facts. (n.d.). Retrieved September 18, 2016, from http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2013/fama-facts.html

Fama, Eugene F. "Forward and Spot Exchange Rates." *Journal of Monetary Economics* Vol. 14. No. 3. November 1984. P. 319-338. Tabl. Bibliogr (1984). Print.

Fedor, L. (2016, September 8). Apple's UK Price Rise blamed on Brexit Currency Shift. Retrieved September 17, 2016, from http://www.ft.com/cms/s/0/047b1294-75a9-11e6-b60a-de4532d5ea35.html#axzz4Ket2lT8f

Hassan, T. A., & Mano, R. C. (2015, April 6). *Forward and Spot Exchange Rates in a Multi-Currency World* (Unpublished doctoral dissertation). University of Chicago. Retrieved September 2, 2016, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2272893
Chicago Booth Research Paper No. 15-02

Hodrick, R., Vassalou, M., 2002. Do we need multi-country models to explain exchange rate and interest rate and bond return dynamics? Journal of Economic Dynamics and Control 26, 1275–1299.

Inci, Ahmet Can, and Biao Lu. "Exchange Rates And Interest Rates: Can Term Structure Models Explain Currency Movements?." *Journal Of Economic Dynamics And Control*28.(2004): 1595-1624. *ScienceDirect*. Web. 26 Apr. 2016.

Kampman, T. (2011). *Explaining Stock Returns: the CAPM, Fama-French Three Factor Model and Carhart's Four Factor Model* (Unpublished master's thesis). Tilburn University.

http://arno.uvt.nl/show.cgi?fid=129382

Kellard, Neil, and Nicholas Sarantis. "Can Exchange Rate Volatility Explain Persistence In The Forward Premium?."*Journal Of Empirical Finance* 15.4 (2008): 714-728.*Business Source Complete*. Web. 29 Apr. 2016.

Meese, Richard. "Currency Fluctuations In The Post-Bretton Woods Era." *Journal Of Economic Perspectives* 4.1 (1990): 117-134. *Business Source Complete*. Web. 26 Apr. 2016.

Meredith, G., Chinn, M.D., 1998. Long-horizon uncovered interest rate parity. Working Paper 6797, NBER.

The Bretton Woods Conference, 1944. (n.d.). Retrieved September 18, 2016, from http://2001-2009.state.gov/r/pa/ho/time/wwii/98681.htm

Staff, I. (2016, April 29). Direct Quote. Retrieved April 07, 2017, from http://www.investopedia.com/terms/d/directquote.asp

Staff, I. (2017, March 28). Capital Asset Pricing Model - CAPM. Retrieved April 07, 2017, from http://www.investopedia.com/terms/c/capm.asp

Qiang, Dai, and Kenneth J. Singleton. "Specification Analysis Of Affine Term Structure Models." *Journal Of Finance* 55.5 (2000): 1943-1978. *Business Source Complete*. Web. 28 Apr. 2016.

@. (2016). The History of Currency - FXCM. Retrieved September 18, 2016, from https://www.fxcm.com/insights/the-history-of-currency/