

Impacts of the US and China Macroeconomic Indicator Announcements on Cambodia Stock Market

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Abstract

Purpose: This study investigates the impacts of five macroeconomic indicator announcements from the United States and China on the volatility of Cambodia Securities Exchange (CSX) index during the period of 2016 to 2021. Generally, it is a well-known fact that a country's macroeconomic announcement can potentially affect the stock return volatility of another; however, despite decades of research, new small emerging countries remain untouched, unexplored, and may contain new knowledge to learn from. **Research design, data, and methodology:** To investigate this subject, E-GARCH model was used as a method to analyze the behavior of volatility of the index upon the releases of five unexpected macroeconomic indicator announcements selected by both the US and China. **Results:** The findings suggested that CPI, GDP, IP, and BOT announcements released by the US were found to have the greatest influence on the volatility of Cambodia stock index. In comparison, the index reacted only to the announcements related to China's IP, PMI, and BOT. **Conclusion:** The contrasting outcomes behavior could be explained by the two countries' trading relationship with Cambodia, prior research, and issues surrounding the release of China's macroeconomic announcement.

Keywords: Financial, Economics, Stock Market, Macroeconomic Indicator Announcements, Cambodia

1. Introduction

This study investigates an interrelationship between macroeconomic indicator announcements among the United States and China and the volatility of Cambodia Securities Exchange. The interrelation between macroeconomic announcement and stock return volatility is not a new knowledge to investor and researcher. Historically, investor have relied heavily on government-released macroeconomic announcements as the main parameter to adjust the price of their stock. As the released figures in the announcements are higher or lower than expected, they will then increase or decrease the stock price accordingly. Fama (1991), in his event studies confirmed this phenomenon and claimed that investors adjust their stock prices following the new arrival of event announcement or new information about specific firm. Graham et al., (2003), further backed the claim with the evidence that showed

macroeconomic variables had a significant influence on stock valuation when examining stock market in the US. Since then, researchers have continued to broaden the scope of their research to the global scale. These days, there are numerous existing literatures that have proved the existence effects of macroeconomic news on stock returns volatility existing across the regions (Nikkinen et al., 2006; Vrugt, 2009; Caken et al., 2014; Franses and Mees, 2011; Nguyen and Ngo, 2014).

As is the case in the Asian region, several comparative studies have examined how the stock index returned of Asian countries reacts to macroeconomic news from major economies such as the United States and China. For instance, Nikkinen et al. (2006), with the belief that stock market is integrated with US macroeconomic news, the researchers examined the reaction of stocks around the world to the release of US macroeconomic announcements. Unexpectedly, most of

the stocks from Asian, G7 countries, and Europe are sensitive to the changes of the US macroeconomic announcement, with the exception of the Latin America and Transition economics, which shows no signs of being impacted by the US news. Additionally, the study suggests many other differences factors such as international trade dependence, market size, foreign investment, industrial and economic structures of individual countries all contribute to the various effect of US macroeconomic announcement have on the global stock market across the region. In another research by Nikkinen et al. (2008), provided additional evidence to show that the stock movements in both developed and emerging Asian country are closely related with US macroeconomic news announcements. Vrugt (2009), confirmed the existence impact of US macroeconomic announcement in the developed Asian stock market, whereas Nguyen (2011), have found US macroeconomic announcements had a strong influence on Vietnam's stock market. Nguyen and Ngo (2014), who also investigated on the impacts of US macroeconomic news on the twelve Asian's stock market, concluded that the emerging Asian market appeared to be much more affected by the US macroeconomic announcements than the developed Asian. On the other hand, Franses and Mees (2011), documented a positive sign of influence of Chinese GDP release on Asian stock market and some world stock markets. Baum et al. (2015) gave some more new evidence to support that China's macroeconomic announcement was as impactful as the US macroeconomic announcement to the Asian and global financial market. Cheng and Yip (2017), claimed that Chinese macroeconomic announcement has had stronger influence on external market, such as Hong Kong, than the domestic stock market. To summarize, the results from the previous studies can clearly prove that macroeconomic news from the US and China affect the stock volatility of developed and emerging Asian. However, when the previous researches have confirmed Asia's stock market's reliance on the US and China economies, for any reasons, it has omitted to include every small emerging economy in Asia, such as Cambodia, which can potentially shed new light on the nature of Asia's economy.

Global economic integration has made it impossible for any countries or markets to survive independently

without interference from external influences (Albuquerque & Vega, 2008). Being a small country in southeast Asia with an open economy system, Cambodia's economy is undeniably reliant on global market movement and foreign investment. The Cambodia securities exchange (CSX) is the country's sole stock market, which was launched in 2007 with seven listed stocks, currently opens for trading (CSX). However, despite its small size and immaturity, Cambodia has recently experienced rapid growth, averaging 7.7 percent of real economic growth rate during the pre-pandemic and projected by The World Bank (2021) to recover at 4 percent in 2021, making it one of the region's fastest growing economies with high growth potential. Additionally, it is also important to note that the country has the closest trading relations with China and the US, which qualifies it as the best candidate for this research.

Based on the given evidence, this research purpose is to investigate and explore the impact of five macroeconomics announcements selected from both the US and China on Cambodia's securities stock index (CSX) during the period of 2016 to 2021. Those five selected macroeconomic variables include, Consumer Price Index (CPI), Gross Domestic Product (GDP), Industrial Production (IP), Purchasing Managers Index (PMI), and Balance of Trade (BOT). To observe the issue, EGARCH is used to analyze the relationship between the volatility of CSX and the selected macroeconomic variables from both countries.

The findings from this research could contribute to the existing literature in three ways. First, it filled the missing gap of the previous findings (Nikkinen et al., 2006; Nikkinen et al., 2008; Nguyen, 2011; Franses and Mees, 2011; Nguyen and Ngo, 2014; and Baum et al., 2015), which ignored Cambodia from their sample lists. Second, this research could be used to introduce investor and researcher to learn new knowledge about the nature of the Cambodia's economy and its relation with the global financial world, which had not been known much before. Third, investor could utilize the result from this research to make investment decisions in Cambodia stock market and evaluate the investment risk.

The structure of this research is organized into six sections as following. Section 2, goes into detail about data that were used in this research. Section 3 gives information about research methodology and statistical treatment. Section 4 discusses about the empirical findings. The discussion, recommendation, and conclusion is covered under Section 5.

2. Data

2.1 Cambodia Securities Exchange Index (CSX)

Launched in late 2007, Cambodia Securities Exchange (CSX) was the main and only place to trade stock and bond in Cambodia. The establishment of CSX was a result of a joint-venture agreement between the Ministry Economy and Finance of the kingdom Cambodia and Korea Exchange (KRX), which held 45% of capital. The purpose behind the creation of CSX is to promote economic growth of the country and facilitate foreign investment. As of October 01, 2021, CSX index was the only index in market with other eight listed stocks available for trading, when the total market capitalization was 7,540,844 (Million Khmer Riel). Throughout its operation year, CSX index performed respectively well. The index showed its peak during the late 2018 to June 2020 with the highest price of 876.96 KHR on September 30, 2019, was more than three folds from 2018, which the price of index was lingered around 300 KHR that time.

In this research, the historical daily closing prices of the index from 1st of January 2016 to 30th of June 2021 will be collected and used to analyze the objectives set in this study. All the data of the index is obtained directly from Cambodia Securities Exchange. To avoid the common non-stationary issues of using time series data, all the raw data from the stock index will be calculated using logarithms method, which is adopted from Buttner et al. (2012). Only the differences results from the estimation are recorded as it can be used to represent the growth rate of the stock price index.

2.2 The US and China macroeconomic announcement

The macroeconomic announcements data of both countries were collected from a trusted website (Investing.com). Information about the actual and

consensus data on the five selected macroeconomic variables were documented from the beginning of 2016 until 30th June 2021. The macroeconomic announcement used in this research includes Consumer Price Index (CPI), Gross Domestic Product (GDP), Industrial Production (IP), Purchasing Managers Index (PMI), and Balance of Trade (BOT). Those macroeconomic variables have been proved to have significant in many previous studies (Nikkinen et al., 2006; Nikkinen et al., 2008; Nguyen, 2011; Franses and Mees, 2011; Nguyen and Ngo, 2014; and Baum et al., 2015). All the macroeconomic indicator data is released and announced in monthly order, except for GDP, which announces on the last month of each quarter. To capture the surprise value of selected macroeconomic variables, we follow Gupta and Reid, (2013) method by calculating the difference between actual and forecast data released as shown in the equation below:

$$\text{Surprise} = \text{actual release} - \text{median forecast}$$

Where actual released is the value of the final release of macroeconomic announcement, whereas median forecast is often referred to the consensus forecast from the survey uses to predict the future released of macroeconomic announcement.

3. Research methodology and statistical treatment

$$\sigma_{csx,t}^2 = (\text{Select GARCH type model}) + \beta_1 CNCPISt + \beta_2 CNGDPS_t + \beta_3 CNIPSt + \beta_4 CNPMIS_t + \beta_5 CNBOTS_t$$

The generalized autoregressive conditional heteroskedastic (GARCH) volatility model is one of the most extensively used volatility estimator models for analyzing the influence of macroeconomic announcements on volatility in various countries. Following previous studies by Nikkinen et al. (2006), Nikkinen et al. (2008), and Caken et al. (2014), we employ GARCH volatility model to test the effects of US and China macroeconomic indicator announcements on Cambodia's stock index return in this research.

To estimate GARCH-type model, the researcher follows Dong (2017)'s research methods as the primary approach. The first crucial step is to ensure all data obtained from the daily return of stock index are linear and stationary, which is a criterion for regression estimation. The researcher uses logarithmic difference, which is one of the methods suggested in Augmented Dickey-Fuller to convert raw data (non-stationary) to stationary data. The logarithmic differences models are shown in the following:

$$Y_t = \log X_t - \log(X_{t-1})$$

Where Y_t is the log differences of stock index return at time t ; X_t is daily return closing price of stock index at time t , (X_{t-1}) is daily return closing price of stock index at time $t-1$.

Following that, Augmented Dickey-Fuller unit root test developed by Dickey and Fuller (1979) was utilized in this study to determine whether the used time series data contains a unit root or is stationary.

After the stationary testing, the data can be used to estimate the auto regressive moving average (ARMA) model. Known as Box-Jenkins method, ARMA model is frequently used for forecasting purposes using time series data. Based on Dong (2017), the process of estimating ARMA model are divided into four critical steps. To begin, the researcher is required to identify the appropriate model with the help of statistical data from the correlogram of both auto correlation (AC) and partial correlation (PAC). Then, the selected AR and MA models are combined to form a new ARMA equation. The following step is to test and correct the equation's problems found during the residual diagnostics process, which includes serial correlation test and heteroscedasticity white tests. Once completed, insignificant and least significant ARMA models will be eliminated from the equation. Finally, ARMA(4,4) is found as the best ARMA model with the lowest Schwarz Information Criterion and chooses to use in GARCH estimation process for this research.

In this study, E-GARCH(2,1) is the best GARCH volatility model for the calculation of volatilities based on Schwarz criterion. Two distinct

regression models need to be estimated specifically for each country, to compensate for time zone differences.

As for the US, Cambodia and the US share a time zone of approximately twenty-four hours or one day apart; thus, a one-day lag ($t-1$) is introduced to the regression model as followed:

Where $\sigma_{CSX,t}^2$ is volatility of Cambodia securities exchange index return; β is the test coefficient; $USCPIS_{t-1}$ is the surprise value of US Consumer Price Index announcement at time $t-1$; $USGDPS_{t-1}$ is the surprise value of US Gross Domestic Product announcement; $USIPS_{t-1}$ is the surprise value of US Industrial Production announcement; $USPMIS_{t-1}$ is the surprise value of US Purchasing Managers Index announcement; $USBOTS_{t-1}$ is the surprise value of US Balance of Trade announcement.

Time zone differences is not a concern for China; therefore, the regression model is estimated as followed:

$$\begin{aligned} \sigma_{CSX,t}^2 = & (\text{Select GARCH type model}) + \\ & \beta_1 USCPIS_{t-1} + \beta_2 USGDPS_{t-1} + \beta_3 USIPS_{t-1} \\ & + \beta_4 USPMIS_{t-1} + \beta_5 USBOTS_{t-1} \end{aligned}$$

Where $\sigma_{CSX,t}^2$ is volatility of Cambodia securities exchange index return; β is the test coefficient; t is day time; $CNCPIS_t$ is the surprise value of China Consumer Price Index announcement; $CNGDPS_t$ is surprise value of China Gross Domestic Product announcement; $CNIPS_t$ surprise value of China Industrial Production announcement; $CNPMIS_t$ is surprise value of China Purchasing Managers Index announcement; $CNBOTS_t$ is surprise value of China Balance of Trade announcement.

4. Results

4.1 Unit Root Test Result

Table 1 summarizes the results of the unit root test using Augmented Dickey-Fuller to ascertain the data's stationary status. As illustrated in Table 1, the result of the Augmented Dickey-Fuller analysis is reported as a t-

statistic and a p-value, which are used to determine whether the data being analyzed is stationary or non-stationary. The result from the table indicates that the daily return data used in this research is stationary or has a unit root with the t-statistic of (-30.86024), while the p-value is 0.0000.

Table 1: Result of Unit Root Test

Variable	t-statistic	p-value	Result
CSXINX	-30.86024	0.0000**	Stationary

Note: ***indicate significance at 5 percent and ** indicate significance 1 percent level of significance respectively.

4.2 Result of Hypotheses Testing

The primary goal of this research is to analyze the relationship between the macroeconomic indicator announcements of US and China and the return volatility of Cambodian stock index from 2016 to 2021 using the GARCH volatility model. Tables 2 presents the equation's estimation results for the United States and China, respectively. The results are reported in three different values including coefficient, z-statistic, and p-value. In the case that the p-value is less than 5 percent of the significant level, the null hypothesis is rejected; however, when the p-value is greater than 5 percentage, it is considered as fail to reject H_0 .

Overall, most of the US macroeconomic indicator announcements were found significant, while only three of five China's macroeconomic announcements were. US's macroeconomic announcements concerning Consumer Price Index (CPI), Gross Domestic Product (GDP), Industrial Production (IP), and Balance of Trade (BOT) reported to have significant impact on the volatility return of Cambodia stock index. Among them, Balance of Trade was shown to have the minimal significant effect at 5 percent level. However, US's Manufacturing Purchasing Managers Index (PMI) announcement was the only variable that failed to reject H_0 , suggesting that US's PMI announcement had no significant influence on the volatility of Cambodia stock index. On the other hand, China's Industrial Production

(IP), Manufacturing Purchasing Managers Index (PMI), and Balance of Trade (BOT) macroeconomic announcements were found to have significant relationships with the return volatility of Cambodia stock index, whereas China's Consumer Price Index (CPI) and Gross Domestic Product (GDP) announcements failed to reject the null hypothesis.

5. Discussion, Recommendation, and Conclusion

5.1 Discussion & Conclusion

This study investigates how macroeconomic indicator announcements from major economies affects stock market volatility of Cambodia. Macroeconomic indicator announcements of the US and China were considered to be the main interest in this investigation due to the countries' major trading role in Cambodia (World Integrated Trade Solution (WITS), 2019). To examine the issue, researcher has adopted GARCH volatility model to analyze the relationship between the five macroeconomic announcements from both US and China and the return volatility of Cambodia stock index.

The results from this study reveals that the return of Cambodia's stock market is significantly affected by the US's Consumer Price Index (CPI), Gross Domestic Product (GDP), Industrial Production (IP), and Balance of Trade (BOT) macroeconomic announcement. This finding is consistent with the previous studies by Nikkinen et al. (2006), Nikkinen et al. (2008), Nguyen (2011), Nguyen and Ngo (2014), and Caken et al. (2014) who found stock market in emerging Asian countries received significant impacts from most of the tested U.S macroeconomic announcements. The US Manufacturing Purchasing Managers Index (PMI) is the only announcement that does not cause any effects on Cambodia's stock market, which is in contrast to an earlier study by Nikkinen et al. (2008) that found US's PMI announcement was the primary cause of volatility in emerging Asian markets.

The findings from this research further indicates the weaker responses of Cambodia stock market to China macroeconomic announcement with only three of five

macroeconomic announcements are significant. Balance of Trade (BOT) was among one of the three significant variables from China macroeconomic announcements. China's Industrial Production (IP), Manufacturing Purchasing Managers Index (PMI) are the other two highly significant variables, which partially matches with the findings of Baum et al. (2015) who also found that China's PMI, and IP moved the global financial market, while CPI was found to be insignificant in both studies. In opposition to Baum et al. (2015), the Gross Domestic Product (GDP), was determined to be non-significant in this research, was significant in the previous study. However, the insignificant effects of

China's GDP announcement on Asian stock market were also reported in another research by Franses and Mees (2011).

There are a few possible reasons that help explain the outcomes mentioned above. First, the difference reactions of Cambodia stock index to the US and China announcements could result from the reason that the US was the major importer of Cambodia's goods, while China was the major exporter to Cambodia (World Bank,

Table 2: Summary of Hypotheses Testing

Hypothesis	Null Hypothesis	Coefficient	Z-Statistic	p-value	Result
H1o	US Consumer Price Index announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	349.6036	8.221417	0.0000**	Reject Ho
H2o	US Gross Domestic Product announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	-426.6348	-4.119202	0.0000**	Reject Ho
H3o	US Industrial Production announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	126.5738	6.539539	0.0000**	Reject Ho
H4o	US Manufacturing Purchasing Managers Index announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	-0.004791***	-0.094734	0.9245	Failed to reject Ho
H5o	US Balance of Trade announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	0.146780	1.907121	0.0565***	Reject Ho
H6o	China Consumer Price Index announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	-61.23394	-1.256664	0.2089	Failed to reject Ho

H7o	China Gross Domestic Product announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	-160.9715	-0.669534	0.5032	Failed to reject Ho
H8o	China Industrial Production announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	-66.34346	-8.079102	0.0000**	Reject Ho
H9o	China Manufacturing Purchasing Managers Index announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	-0.201390	-1.860024	0.0629	Reject Ho
H10o	China Balance of Trade announcement does not significantly affect the return volatility of Cambodia Securities Exchange index.	0.033791***	3.114333	0.0018**	Reject Ho

Note: ***indicate significance at 5 percent and ** indicate significance 1 percent level of significance respectively.

2019), which in return could become the factors that influence the importance of macroeconomic announcements of each country to Cambodia. Next, due to the fact that US was the leading economy and had been found to have a strong influence on Asian market in many previous studies (Nikkinen et al., 2006; Nikkinen et al., 2008; Nguyen 2011; Nguyen and Ngo, 2014; and Caken et al., 2014), there was no surprise that the stock market of Cambodia was also impacted by the US macroeconomic announcement. Finally, both Baum et al. (2015) and Franses and Mees (2011), blamed on the unreliability, inconsistency, and the data leakage around China's macroeconomic announcement as the factors that contributed to the least significant of the announcement and made it hard to obtain accurate result in the research.

In conclusion, Cambodia stock index tends to react stronger to the US macroeconomic announcements related to inflation, country's output, trade deficit, and industrial output, while ignoring on the economic condition in manufacturing and service sectors. The stock market reaction was not as significant when testing with China's macroeconomic announcements. The stock index was found to be sensitive to only any

changes on China's IS, PMI, and BOT. However, China's GDP and CPI are not the key drivers of the Cambodian stock market's return volatility.

5.2 Recommendation for Future Study

Based on the existing findings, a few potential new things can be done for the purpose of future study and research development. Initially, more new related macroeconomic announcement from current countries or new countries should be added to further extend the scope of the current research. Second, external factor such as Covid-19 pandemics, economic crisis, or political as such should be considered as a factor that can possibly affect the stock market. Lastly, apply a new estimation method or model and collect data from a more respectable data provider to improve reliability and accuracy of the future study.

References

- Albuquerque, R., & Vega, C. (2008, 08 13). Economic News and International Stock Market Co-movement. *Review of Finance*, 13(3), 401–465. doi:https://doi.org/10.1093/rof/rfn020



- Baum, C. F., Kurov, A., & Wolfe, M. H. (2015). What do Chinese macro announcements tell us about the world economy? *Journal of International Money*, 59, 100–122. Retrieved 06 25, 2021, from <http://dx.doi.org/10.1016/j.jimonfin.2015.07.02>
- Buttner, D., Hayo, B., & Neuenkirch, M. (2012, February). The impact of foreign macroeconomic news on financial. *Empirica*, 39(1), 19-44. doi:10.1007/s10663-010-9153-0
- Cakan, E., Doytch, N., & Upadhyaya, K. P. (2015). Does U.S. macroeconomic news make emerging financial markets riskier? *Borsa*, 15(1), 37-43. Retrieved 07 05, 2021, from <https://www.journals.elsevier.com/borsa-istanbul-review>
- Chen, C., Roll, R., & Richard, S. A. (1986, July). Economic Forces and the Stock Market. *The Journal of Business*, 59(3), 383-403. Retrieved 06 12, 2021, from <https://www.jstor.org/stable/2352710>
- Cheng, A. W., & Yip, I. W. (2017, 06). China's Macroeconomic Fundamentals on Stock Market Volatility: Evidence from Shanghai and Hong Kong. *China's Macroeconomic Fundamentals*, 20(2), 1750014. doi:10.1142/S021909151750014X
- CSX. (n.d.). *CSX Profile*. Retrieved 08 03, 2021, from Cambodia Securities Exchange: <http://csx.com.kh/en/about/profile.jsp?MNCD=10301>
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the Estimators for Autoregressive Time Series With a Unit Root. *Journal of the American Statistical Association*, 74(366), 427-431. Retrieved 08 17, 2021, from <https://www.jstor.org/stable/2286348>
- Dong, Y. (2017). The impact of the macroeconomic indicator announcements on the volatilities of equity mutual fund NAV: A case study of 10 equity mutual funds in China during the period 2010 to 2016. *Assumption University of Thailand*, 1-191. Retrieved 04 28, 2021, from <http://repository.au.edu/handle/6623004553/20511>
- Fama, E. F. (1991, December). Efficient Capital Markets: II. *The Journal of Finance*, 46(5), 1575-1617. Retrieved 06 10, 2021, from <https://www.jstor.org/stable/2328565>
- Franses, P. H., & Mees, H. (2011). Does news on real Chinese GDP growth impact stock markets? *Applied Financial Economics*, 21(1-2), 61-66. doi:10.1080/09603107.2011.523190
- Graham, M., Nikkinen, J., & Sahlstrom, P. (2003). Relative Importance of Scheduled. *JOURNAL OF ECONOMICS AND FINANCE*, 27(2), 153-165. Retrieved 06 06, 2021
- Gupta, R., & Reid, M. (2013). Macroeconomic surprises and stock returns in South Africa. *Studies in Economics and Finance*, 30(3), 266-282. doi:10.1108/SEF-Apr-2012-0049
- Investing.com. (n.d.). *Economic Calendar*. Retrieved 09 08, 2021, from investing.com: <https://www.investing.com/economic-calendar>
- Nguyen, T. (2011). US macroeconomic news spillover effects on Vietnamese stock market. *The Journal of Risk Finance*, 12(5), 389-399. doi:10.1108/15265941111176127
- Nguyen, T., & Ngo, C. (2014). Impacts of the US macroeconomic news on Asian stock markets. *The Journal of Risk Finance*, 15(2), 149-179. doi:10.1108/JRF-09-2013-0064
- Nikkinen, J., Omran, M., Sahlström, P., & Äijö, J. (2006, July 28). Global stock market reactions to scheduled U.S. macroeconomic news announcements. *Global Finance Journal*, 17(1), 92–104. doi:10.1016/j.gfj.2006.06.003

Nikkinen, J., Omran, M., Sahlström, P., & Äljö, J. (2008, 06 01). The Effects of US Macroeconomic News Announcements on Emerging Stock Markets in the Asia-Pacific Region. *The Asia Pacific journal of economics & business*, 12(1), 3-14, 63-64. Retrieved 06 05, 2021

Schwert, G. W. (1989, December). Why Does Stock Market Volatility Change Over Time? *The Journal of Finance*, 44(5), 1115-1153. doi:<https://doi-org.ezproxy.library.uq.edu.au/10.2307/2328636>

The World Bank. (2021, 10 20). *The World Bank In Cambodia*. Retrieved 11 16, 2021, from The World Bank: <https://www.worldbank.org/en/country/cambodia/overview#1>

Vrugt, E. B. (2009). U.S. and Japanese macroeconomic news and stock market volatility in Asia-Pacific. *Pacific-Basin finance journal*, 17(5), 611-627. Retrieved 06 20, 2021, from <https://doi.org/10.1016/j.pacfin.2009.03.003>

World Integrated Trade Solution (WITS). (2019). *Cambodia trade balance, exports and imports by country 2019*. Retrieved 01 24, 2022, from World Integrated Trade Solution (WITS): <https://wits.worldbank.org/CountryProfile/en/Country/KHM/Year/2019/TradeFlow/EXPIMP/Partner/by-country>