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科研費
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# 科学研究費助成事業　　研究成果報告書

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課題番号：１９Ｋ０１７５６
研究課題名（和文）A research on the response of Japan's financial markets to information/news on important changes in the international economy and policy

研究課題名（英文）A research on the response of Japan's financial markets to information/news on important changes in the international economy and policy

研究代表者
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研究成果の概要（和文）：重要な政治経済イベントに関するニュースが日本の金融市場に与える影響について調査した。2016年のブレクジット国民投票（BR）と米国大統領選挙（USE）の結果に関するニュースが、外国為替レートと株式市場指数にどのように影響したかを調べた。分析には、Nelson (1991) によって提案されたEGARCH (exponential GARCH) モデル、相互相関関数、および日次データの対数収益率を使用した。研究結果は、BRとUSE後2週間以内に為替レートと株式市場指数に統計的に有意な変化の証拠を明らかにし、ニュースの影響が1週間以内に間接的に変数間でどのように広がったことを示した。

研究成果の学術的意義や社会的意義
The research is distinct from previous studies in two main ways. First, it incorporates the causality relationship for sectoral stock indices, making the results more informative. Second, it considers the indirect impact of internal and external shocks through volatility transmission.

研究成果の概要（英文）：I conducted my research on the impact of news about important political and economic events on Japanese financial markets. I examined how news about the results of the Brexit referendum (BR) and the United States presidential election (USE) in 2016 affected foreign exchange rates and stock market indexes. I employed the exponential generalised autoregressive conditional heteroscedasticity (EGARCH) model, the cross-correlation function, and the daily logarithmic returns of JPY, Nikkei, TOPIX and the TOPIX components in estimations. This research revealed evidence of statistically significant changes in exchange rates and stock market indexes within two weeks after the BR and USE, and demonstrated how the impact of news about the results of BR and USE might spread among the variables indirectly within a week.

研究分野：International Economics

キーワード：Financial markets　International news　Japan　Yen　Nikkei　TOPIX　Volatility　Causality

## 1. 研究開始当初の背景

(1) The accelerated advancement of information and communication technologies in the last two decades has increased the size of the world stock and foreign exchange markets. The faster flow of information has made financial variables more volatile. Changes in both domestic and international political and economic environments affect investors' expectations and the important variables of financial markets.

(2) In developed countries such as Japan, financial markets, particularly foreign exchange and stock markets, are highly sensitive to changes in international economic and political environments. The Japanese foreign exchange and stock markets immediately respond to every event with significant political and economic consequences. Changes in exchange rates and stock market indexes have impacts on major economic fundamentals, and research on variations in the exchange rate and stock market indexes is important.

## 2. 研究の目的

(1) The research purpose was to investigate the impacts of international information (news) on the financial markets in Japan. To examine how news about the results of the Brexit referendum (BR) and the United States presidential election (USE) in 2016 affected foreign exchange rates and stock market indexes, in particular, the changes and volatility overflow among the exchange rate of the Japanese yen (JPY), the Nikkei Stock Average (Nikkei), the Tokyo Stock Price Index (TOPIX) and the TOPIX sectoral indices.

(2) To examine the impact of information about the BR and USE on the returns and volatility of the exchange rate and stock price index in Japan, the asymmetry of the news impact on the volatility of the exchange rate and stock price index, and changes in the causality relationship between the exchange rate and stock price index.

(3) To measure volatility overflow among sectoral stock indices, between sectoral indices and major financial indicators, and the direct and indirect impacts of external shocks on the volatility of financial variables.

## 3. 研究の方法

(1) In the study, I applied the exponential generalized autoregressive conditionally heteroscedasticity (EGARCH) model (Nelson 1991) to calculate the conditional mean and conditional variance. Dummy variables for the first week after the BR and USE and for the first and second weeks combined after the BR and USE were incorporated as additional independent variables in the conditional mean and variance equations. To examine the changes in the causality relationship between the exchange rate and stock price index, I followed the procedures proposed by Hong (2001). Parameters of the models were specified based on the Schwarz–Bayesian

information criterion (SBIC) and the log-likelihood ratio. The Ljung–Box Q test was used to evaluate the robustness of the model specification.
(2) The daily logarithmic returns of the exchange rate of JPY per one USD, the closing price index of Nikkei 225, the closing price index of TOPIX and the closing price of the TOPIX sectoral indices with a weight of 5% and more (banks, chemicals, electric appliances, information and communication, machinery and transportation equipment indices) for the period of 10 February 2016 to 24 March 2017 were used in estimations. The raw data came from the Bank of Japan, TSE and Yahoo Finance. The unit root test and the Lagrange multiplier (LM) test for autoregressive conditional heteroscedasticity (ARCH) were conducted as pre-estimation tests to examine the appropriateness of the data for use in the model.

## 4. 研究成果

(1) The empirical findings showed that exchange rates and stock price index returns were significantly affected by the BR and USE within two weeks of the events.
(2) The BR caused exchange rates to appreciate and the stock price index (the TOPIX) to decrease.
(3) The BR increased the volatility of exchange rates (in the first week), causing instability in Japanese financial markets. This is in line with the findings of Belke et al. (2018), who demonstrated that BR-induced policy uncertainty caused instability in financial markets in the UK and other European countries.
(4) The USE caused exchange rates to depreciate and the stock price index (the Nikkei) to increase. This finding is consistent with Shaikh (2017) argument about the effect of the USE on equity and foreign exchange markets across the globe.
(5) Asymmetric impact coefficients were statistically significant for the variance of stock price indexes, demonstrating the stronger effect of negative news than positive news on the volatility of the Japanese stock market for the period under estimation.
(6) The BR and USE affected the causality relationship between the exchange rate and stock price indexes. The cross-correlation coefficient values and the asymptotic power of Hong's (2001) Q-statistics dramatically changed after both events.
(7) The findings highlighted causality in variance (volatility spillover) among the variables.
(8) The research revealed that volatility could also spread indirectly among the variables (from one variable to another through a third variable).
(9) The estimations demonstrated a significant direct effect from the external shocks on the exchange rates of JPY, Nikkei and the transportation equipment index. Considering the presence of causality in variance from Nikkei and the transportation equipment index to the other variables, we suggest that external shocks may also affect other variables indirectly through volatility overflow

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Belke, Ansgar, Irina Dubova, and Thomas Osowski. 2018. Policy uncertainty and international financial markets: the case of Brexit. Applied Economics 50: 3752–70.

Shaikh, Imlak. 2017. The 2016 U.S. presidential election and the stock, FX and VIX markets. The North American Journal of Economics and Finance 42: 546–63.

５．主な発表論文等

〔雑誌論文〕　計2件（うち査読付論文　2件／うち国際共著　2件／うちオープンアクセス　2件）

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| １．著者名<br>Sultonov Mirzosaid | ４．巻<br>14 (11) |
| ２．論文標題<br>External Shocks and Volatility Overflow among the Exchange Rate of the Yen, Nikkei, TOPIX and Sectoral Stock Indices | ５．発行年<br>2021年 |
| ３．雑誌名<br>Journal of Risk and Financial Management | ６．最初と最後の頁<br>560 (1-13) |
| 掲載論文のDOI（デジタルオブジェクト識別子）<br>10.3390/jrfm14110560 | 査読の有無<br>有 |
| オープンアクセス<br>オープンアクセスとしている（また、その予定である） | 国際共著<br>該当する |

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| １．著者名<br>Sultonov Mirzosaid | ４．巻<br>8 (3) |
| ２．論文標題<br>The Impacts of International Political and Economic Events on Japanese Financial Markets | ５．発行年<br>2020年 |
| ３．雑誌名<br>International Journal of Financial Studies | ６．最初と最後の頁<br>43 (1-10) |
| 掲載論文のDOI（デジタルオブジェクト識別子）<br>10.3390/ijfs8030043 | 査読の有無<br>有 |
| オープンアクセス<br>オープンアクセスとしている（また、その予定である） | 国際共著<br>該当する |

〔学会発表〕　計4件（うち招待講演　0件／うち国際学会　4件）

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| １．発表者名<br>Sultonov, Mirzosaid |
| ２．発表標題<br>External shocks and volatility spillover effect among exchange rate of yen, TOPIX index and sectoral stock indices |
| ３．学会等名<br>The 20th International Conference of the Japan Economic Policy Association, Tokyo（国際学会） |
| ４．発表年<br>2021年 |

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| １．発表者名<br>Sultonov, Mirzosaid |
| ２．発表標題<br>International news and relationship between exchange rate of yen, TOPIX index and sectoral stock indices |
| ３．学会等名<br>Global Conference on Advances in Business and Social Sciences, Tsuruoka（国際学会） |
| ４．発表年<br>2020年 |

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| 1．発表者名<br>Sultonov, Mirzosaid |
| 2．発表標題<br>The Response of Japan’s financial markets to information on important changes in the international economy and policy |
| 3．学会等名<br>The 94th Annual Conference of WEAI, San Francisco, CA（国際学会） |
| 4．発表年<br>2019年 |

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| 1．発表者名<br>Sultonov, Mirzosaid |
| 2．発表標題<br>The impacts of international political and economic events on Japanese financial markets |
| 3．学会等名<br>The 18th International Conference of the Japan Economic Policy Association, JEPA, Tokyo（国際学会） |
| 4．発表年<br>2019年 |

〔図書〕　計0件

〔産業財産権〕

〔その他〕

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6．研究組織

| | 氏名<br>（ローマ字氏名）<br>（研究者番号） | 所属研究機関・部局・職<br>（機関番号） | 備考 |
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7．科研費を使用して開催した国際研究集会

〔国際研究集会〕　計0件

8．本研究に関連して実施した国際共同研究の実施状況

| 共同研究相手国 | 相手方研究機関 |
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