

# The Impacts of Expected and Unexpected Volatilities of Interest Rates and Exchange Rates on the Stock Returns of ...

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## ABSTRACT

This paper intends to investigate whether the expected and unexpected fluctuations of interest rate and exchange rate will generate different impacts on the daily stock returns of three different firm sizes in Taiwan and Japan and to compare whether there are different responses under two different interest rate levels and exchange rate systems between a well and a less developed financial markets. The study period spans from 1998 to 2006 at daily data frequency. We first employ ARIMA model to divide the IR and ER into the expected and unexpected of IR and ER. We then utilize the structural SVAR model to examine the dynamic relationships among above variables. The empirical results show that unexpected IR shocks have larger impact on Taiwan than Japan stock market. In Taiwan stock market, the stock returns of large firms are strongest affected by ER, however, the stock returns of all firms are huge affected by ER in the Japan stock market. The fluctuating range in ER is relatively large in the Japan stock market, the explanation of phenomenon might be that the under the free floating exchange regime in Japan. Moreover, we find that there is less influence degree in the Japan stock market, as well as the response time is relatively long in the Taiwan stock market.

Keywords : autoregressive integrated moving average model (ARIMA) ; interest rate ; exchange ate ; stock market ; structural vector autogression (SVAR)

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## REFERENCES

- References Abdalla, I. S. A., & Murinde, V. (1997). Exchange Rate and Stock Price Interactions in Emerging Financial Markets: Evidence on India, Korea, Pakistan and the Philippines. *Applied Financial Economics*, 7 (1), 25-35. Aggarwala, R. (1981). Exchange Rates and Stock Prices: A Study of the US Capital Markets under Floating Exchange Rates. *Akron Business and Economic Review*, 12 (2), 7-12. Ajayi, A. R., & Mougoue, M. (1996). On the Dynamic Relation between Stock Prices and Exchange Rates. *Journal of Financial Research*, 19 (2), 193-207. Akgiray, V. (1989). Conditional Heteroscedasticity in Time Series of Stock Returns: Evidence and Forecasts. *Journal of Business*, 62 (1), 55-80. Akaike, H. (1974). A New Look at the Statistical Model Identification. *IEEE Transactions on Automatic Control*, Automatic Control 19 (6), 716-723. Apte, P. G. (2001). The Interrelationship between Stock Markets and the Foreign Exchange Market. *Prajanan*, 30 (1), 17-29. Badrinath, S. G., Kale, J. R., & Noe, T. H. (1995). Of Shepherds, Sheep and the Cross-Autocorrelations in Equity Returns. *Review of Financial Studies*, 8 (2), 401-430. Banz, R. W. (1981). The Relationship between Return and Market Value of Common Stocks. *Journal of Financial Economics*, 9 (1), 3-18. Bartov, E., & Bodnar, G. M.

(1994). Firm Valuation, Earnings Expectations and Exchange Rate Exposure Effect. *Journal of Finance*, 49 (5), 1755-1785. Benink, H. A., & Wolff, C. C. P. (2000). Survey Data and the Interest Rate Sensitivity of US Bank Stock Returns. *Economic Notes*, 29 (2), 201-213. Bernanke, B., & Blinder, A. S. (1992). The Federal Funds Rate and the Channel of Monetary Transmission. *American Economic Review*, 82 (4), 901-921. Bernanke, B., & Gertler, M. (1989). Agency Costs, Net Worth, and Business Fluctuations. *American Economic Review*, 79 (1), 14-31. Bodnar, G. M., & Gentry, W. M. (1993). Exchange Rate Exposure and Industry Characteristics: Evidence from Canada, Japan, and the USA. *Journal of International Money and Finance*, 12 (1), 29-45. Bodnar, G. M., & Wong, M. H. F. (2003). Estimating Exchange Rate Exposures: Issues in Model Structure. *Financial Management*, 32 (1), 35-67. Boudoukh, J., Richardson, M., & Whitelaw, R. (1994). A Tale of Three Schools: Insights on Autocorrelations of Short-Horizon Returns. *Review of Financial Studies*, 7 (3), 539-573. Burmeister, E., & Wall, K. D. (1986). The Arbitrage Pricing Theory and Macroeconomic Factor Measures. *Financial Review*, 21 (1), 1-20. Burmeister, E., & McElroy, M. B. (1988). Joint Estimation of Factor Sensitivities and Risk Premia for the Arbitrage Pricing Theory. *Journal of Finance*, 43 (3), 721-733. Campbell, J., Lo, A., & MacKinlay, A. (1997). *The Econometrics of Financial Markets*. Princeton University Press. Chang, E. C., & Pinegar, J. M. (1987). Risk and Inflation. *Journal of Financial and Quantitative Analysis*, 22 (1), 89-99. Chang, E., Chou, R. Y., & Nelling, E. F. (2000). Market Volatility and Demand for Hedging in Stock Index Futures. 20 (2), 105-125. Chaudhuri, K. (1997). Cointegration, Error Correction and Granger Causality: An Application with Latin American Stock Markets. *Economics Letters*, 4 (8), 469-471. Chen, N. F., Roll, R., & Ross, S. A. (1986). Economic Forces and the Stock Market. *Journal of Business*, 59 (3), 383-403. Chen, N. F. (1991). Financial Investment Opportunities and the Macroeconomy. *Journal of Finance*, 46 (2), 529-554. Chen, S., & Jordan, B. D. (1993). Some Empirical Tests in the Arbitrage Pricing Theory: Macrovariables versus Derived Factors. *Journal of Banking and Finance*, 17 (1), 65-89. Cheung, Y. W., & Ng, L. K. (1992). Stock Price Dynamics and Firm Size: An Empirical Investigation. *Journal of Finance*, 47 (5) 1985-1997. Chiang, T. C., & Doong, S. C. (2001). Empirical Analysis of Stock Returns and Volatility: Evidence from Seven Asian Stock Markets Based on TAR-GARCH Model. *Review of Quantitative Finance and Accounting*, 17 (3), 301-318. Chiang, T. C., Yang, S. Y., & Wang, T. S. (2000). Stock Return and Exchange Rate Risk: Evidence from Asian Stock Markets Based on a Bivariate GARCH Model. *International Journal of Business*, 5 (2), 97-117. Coate, D., & VanderHoff, J. (1986). Stock Returns, Inflation, and Real Output. *Economic Inquiry*, 24 (4), 555-561. Cochrane, J. H. (1988). How Big Is the Random Walk in GNP? *Journal of Political Economy*, 96 (5), 893-920. Cornell, B. (2000). Equity Duration, Growth Options, and Asset Pricing. *Journal of Portfolio Management*, 26 (3), 105-111. Cozier, B. V., & Rahman, A. H. (1988). Stock Returns, Inflation, and Real Activity in Canada. *Canadian Journal of Economics*, 21 (4), 759-774. Cutler, D. M., Poterba, J. M., & Summers, L. H. (1989). What Moves Stock Prices? *Journal of Portfolio Management*, 15 (3), 4-12. Darrat, A., & Brocato, J. (1994). Stock Market Efficiency and the Federal Budget Deficit: Another Anomaly? *The Financial Review*, 29 (1), 49-75. Darrat, A. F. (1990). Stock Returns, Money and Fiscal Deficit. *Journal and Financial and Quantitative Analysis*, 25 (3), 387-398. Dhakal, D., Kandil, M., & Sharma, S. C. (1993). Causality between the Money Supply and Share Prices: A VAR Investigation. *Quarterly Journal of Business and Economics*, 32 (3), 52-74. Dickey, D. A., & Fuller, W. A. (1979). Distributions of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association*, 74 (2), 427-431. Dickey, D. A., & Fuller, W. A. (1981). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica*, 49 (4), 1057-1072. Domian, D. L., Gilster, J. E., & Louton, D. A. (1996). Expected Inflation, Interest Rates, and Stock Returns. *The Financial Review*, 31 (4), 809-830. Dominguez, K. M. E., & Tesar, L. L. (2006). Exchange Rate Exposure. *Journal of International Economics*, 68 (1), 188-218. Doong, S. C., Yang, S. Y., & Wang, A. T. (2005). The Dynamic Relationship and Pricing of Stocks and Exchange Rates: Empirical Evidence from Asian Emerging Markets. *Journal of American Academy of Business*, 7 (1), 118-123. Edwards, S. (1993). Exchange Rates as Nominal Anchors. *Weltwirtschaftliches Archiv*, 129 (1), 1-32. El-Masry, A. A. (2006). The Exchange Rate Exposure of UK Nonfinancial Companies: Industry Level Analysis. *Managerial Finance*, 32 (2), 115-136. Elyasiani, E., & Mansur, I. (2003). International Spillover of Risk and Return among Major Banking Institutions: A Bivariate GARCH Model. *Journal of Accounting, Auditing and Finance*, 18 (2), 303-330. Engle, R. F., & Yoo, B. S. (1987). Forecasting and Testing in Cointegrated Systems. *Journal of Econometrics*, 35 (1), 143-159. Engle, R., & Granger, C. W. S. (1987). Cointegration and Error Correction: Representation Estimation and Testing. *Econometrica*, 55 (2), 251-276. Ewing, B. T., Payne, J. E., & Forbes, S. M. (1998). Co-Movements of the Prime Rate, CD Rate, and the S and P Financial Stock Index. *Journal of Financial Research*, 21 (4), 469-482. Fama, E. (1965). The Behaviour of Stock Market Prices. *Journal of Business*, 38 (1), 34-105. Fama, E. (1981). Stock Returns, Real Activity, Inflation, and Money. *American Economic Review*, 71 (4), 545-565. Fama, E. (1991). Efficient Capital Markets II. *Journal of Finance*, 49 (3), 1575-1617. Fama, E., & Schwert, G. W. (1977). Asset Returns and Inflation. *Journal of Financial Economics*, 5 (2), 115-146. Fama, E. F., & French, K. R. (1992). The Cross-Section of Expected Stock Returns. *Journal of Finance*, 47 (2), 427-465. Fang, W., & Miller, S. M. (2002). Dynamic Effects of Currency Depreciation on Stock Market Returns during the Asian Financial Crisis. University of Connecticut, Department of Economics, Working Paper 2002-2031. Ferson, W., & Harvey, C. (1991). The Variation of Economic Risk Premiums. *Journal of Political Economy*, 99 (2), 385-415. Ferson, W., & Harvey, C. (1993). The Risk and Predictability of International Equity Markets. *Review of Financial Studies*, 6 (3), 527-566. Ferson, W., & Harvey, C. (1994). Sources of Risk and Expected Returns in Global Equity Markets. *Journal of Banking and Finance*, 18 (4), 775-803. Ferson, W., & Korajczyk, R. A. (1995). Do Arbitrage Pricing Models Explain the Predictability of Stock Returns? *Journal of Business*, 68 (3), 309-349. Fisher, I. (1930). *The Theory of Interest*. Macmillan, New York. Flannery, M. J., & Protopapadakis, A. A. (2002). Macroeconomic Factors Do Influence Aggregate Stock Returns. *The Review of Financial Studies*, 15 (3), 751-782. Flood, E. Jr., & Lessard, D. R. (1986). On the Measurement of Operating Exposure to Exchange Rates: A Conceptual Approach. *Financial Management*, 15 (1), 25-37. Frank, P., & Young, A. (1972). Stock Prices Reaction of Multinational Firms to Exchange Realignments. *Financial Management*, 1 (4), 66-73. Frennberg, P.,

& Hansson, B. (1993). Stock Returns and Inflation in Sweden, Working Paper No. 25, Lund University. Gertler, M. (1992). Financial Capacity and Output Fluctuations in an Economy with Multi-Period Financial Relationships. *Review of Economic Studies*, 59 (200), 455-472. Gertler, M., & Gilchrist, S. (1994). Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms. *The Quarterly Journal of Economics*, 109 (2), 309-340. Geske, R., & Roll, R. (1983). The Fiscal and Monetary Linkage between Stock Returns and Inflation. *Journal of Finance*, 38 (1), 1-34. Giovannini, A., & Jorion, P. (1987). Interest Rates and Risk Premia in the Stock Market and in the Foreign Exchange Market. *Journal of International Money and Finance*, 6 (1), 107-123. Gjerde, O., & Sættem, F. (1999). Causal Relations among Stock Returns and Macroeconomic Variables in a Small, Open Economy. *Journal of International Financial Markets Institutions and Money*, 9 (1), 61-74. Gowland, D. H., & Baker, S. (1970). Efficiency, Rationality and Causality, University of York, Discussion Paper 23. Granger, C. W. (1986). Some Recent Developments in the Concept of Causality. *Journal of Econometrics*, 39 (1;2), 199-211. Granger, C. W., Huang, B. N., & Yang, C. W. (2000). A Bivariate Causality between Stock Prices and Exchange Rates: Evidence from Recent Asian Flu. *The Quarterly Review of Economics and Finance*, 40 (3), 337-354. Granger, C. W., & Morgerstern, O. (1963). Spectral Analysis of New York Stock Market Prices. *Kyklos*, 16 (1), 1-27. Hamao, Y. (1988). An Empirical Examination of the Arbitrage Pricing Theory: Using Japanese Data. *Japan and the World Economy*, 1 (1), 45-61. Harris, R. D. F., & Pisedtasalai, A. (2006). Return and Volatility Spillovers between Large and Small Stock in the UK. *Journal of Business Finance and Accounting*, 33(9;10), 1556-1571. Harris, T. C., & Opler, T. C. (1990). Stock Market Returns and Real Activity. Working Paper. Chicago: University of Chicago Press. Hekman, C. R. (1985). A Financial Model of Foreign Exchange Exposure. *Journal of International Business Studies*, 16 (2), 83-99. Hevert, K. T., McLaughlin, R. M., & Taggart, R. A. (1998). Interest Rates, Inflation and the Value of Growth Options. *The Quarterly Review of Economics and Finance*, 38 (3), 599-613. Hodder, J. E. (1982). Exposure to Exchange-Rate Movements. *Journal of International Economics*, 13 (3;4), 375-386. Homa, K. E., & Jaffee, D. M. (1971). The Supply of Money and Common Stock Prices. *Journal of Finance*, 26 (5), 1045-1066. Hondroyannis, G., & Papapetrou, E. (2001). Macroeconomic Influences on the Stock Market. *Journal of Economics and Finance*, 25 (1), 33-49. Jacobs, B., & Levy, K. N. (1989). Forecasting the Size Effect. *Financial Analysis Journal*, 45 (3), 38-50. Jareno, F. (2005). Flow-Through Capability: The Spanish Case. *Journal of Asset Management*, 6 (3), 191-205. Johansen, S. (1988). Statistical Analysis of Cointegration Vectors. *Journal of Economic Dynamics and Control*, 12 (2;3), 231-254. Johansen, S., & Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration - with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52 (2), 169-210. Johansen, S., & Juselius, K. (1992). Testing Structural Hypotheses in a Multivariate Cointegration Analysis at the Purchasing Power Parity and the Uncovered Interest Parity for the UK. *Journal of Econometric*, 53 (2), 211-244. Jorion, P. (1990). The Exchange-Rate Exposure of US Multinationals. *Journal of Business*, 63 (3), 331-345. Kim, S. (2003). Monetary Policy, Foreign Exchange Intervention, and the Exchange Rate in a Unifying Framework. *Journal of International Economics*, 60 (2), 355-386. Kiyotaki, N., & Moore, J. (1997). Credit Cycles. *Journal of Political Economy*, 105 (2), 211-248. Kwon, C. S., Shin, T. S., & Bacon, F. W. (1997). The Effect of Macroeconomic Variables on Stock Market Returns in Developing Markets. *Multinational Business Review*, 5 (2), 63-70. Lee, B. (1992). Causal Relations among Stock Returns, Interest Rates, Real Activity, and Inflation. *Journal of Finance*, 47 (4), 1591-1603. Lee, M., & Chen, C. D. (2005). The Intraday Behaviors and Relationships with its Underlying Assets: Evidence on Option Market in Taiwan. *International Review Financial Analysis*, 14 (5), 587-603. Levi, M (1993). *International Finance: Financial Management and the International Economy*. New York: NY, McGraw-Hill. Lo, A. W., & MacKinlay, A. C. (1990a). An Econometric Analysis of Nonsynchronous Trading. *Journal of Econometrics*, 45 (2), 181-211. Lo, A. W., & MacKinlay, A. C. (1990b). When are Contrarian Profits due to Shock Market Overreaction? *Review of Financial Studies*, 3 (2), 175-205. Lobo, B. J. (2000). Asymmetric Effects of Interest Rate Changes on Stock Prices. *The Financial Review*, 35 (3), 125-143. Ma, K. C., & Kao, G. W. (1990). On Exchange Rate Changes and Stock Price Reactions. *Journal of Business Accounting*, 17 (3), 441-449. Malkiel, B. (1979). The Capital Formation Problem in the United States. *Journal of Finance*, 34 (2), 291-306. Mansur, I., & Elyasiani, E. (1995). Sensitivity of Bank Equity Returns to the Level and Volatility of Interest Rates. *Managerial Finance*, 21 (7), 58-77. McQueen, G., Pinegar, M., & Thorley, S. (1996). Delayed Reaction to Good News and the Cross-Autocorrelation of Portfolio Returns. *Journal of Finance*, 51 (3), 889-919. Mech, T. (1993). Portfolio Autocorrelation. *Journal of Financial Economics*, 34 (3), 307-344. Mihira, T., & Sugihara, S. (2000). A Structural VAR Analysis of the Monetary Policy in Japan. Discussion Paper, 94. Mishra, A. K. (2004). Stock Market and Foreign Exchange Market in India: Are they Related? *South Asian Journal of Management*, 11 (2), 12-31. Mukherjee, T. K., & Naka, A. (1995). Dynamic Relations between Macroeconomic Variables and the Japanese Stock Markets: An Application of a Vector Error Correction Model. *Journal of Financial Research*, 18 (2), 223-237. Mukherji, S., Dhatt, M. S., & Kim, Y. H. (1997). A Fundamental Analysis of Korean Stock Returns. *Financial Analysts Journal*, 53 (3), 75-80. Muradoglu, G., Taskin, F., & Bigan, I. (2000). Causality between Stock Returns and Macroeconomic Variables in Emerging Markets. *Russian & East European Finance and Trade*, 36 (6), 33-53. Nelson, C. R., & Plosser, C. I. (1982). Trends and Random Walks in Macroeconomic Time Series - Some Evidence and Implications. *Journal of Monetary Economic*, 10 (2), 139-162. Ong, L. L., & Izan, H. Y. (1999). Stocks and Currencies: Are They Related? *Applied Financial Economics*, 9 (5), 523-532. Osterwald-Lenum, M. (1992). A Note with Quartiles as the Asymptotic Distribution of the Maximum Likelihood Cointegration Rank Test Statistics. *Oxford Bulletin of Economics and Statistics*, 54 (3), 461 - 472. Park, T. H., Switzer, L. N., & Bedrossian, R. (1999). The Interactions between Trading Volume and Volatility: Evidence from the Equity Options Markets. *Applied Financial Economics*, 9 (6), 627-637. Patra, T., & Poshakwale, S. (2006). Economic Variables and Stock Market Returns: Evidence from the Athens Stock Exchange. *Applied Financial Economics*, 16 (13), 993-1005. Pearce, D. K., & Roley, V. V. (1985). Stock Price and Economic News. *Journal of Business*, 58 (1), 49-67. Pearce, D. K., & Roley, V. V. (1988). Firm Characteristics, Unanticipated Inflation, and Stock Returns. *Journal of Finance*, 43 (4), 965-981. Perez-Quiros, G., &

Timmermann, A. (2000). Firm Size and Cyclical Variations in Stock Returns. *Journal of Finance*, 55 (3), 1229-1262. Perron, P. (1988). Trends and Random Walks in Macroeconomic Time: Series Further Evidence from a New Approach. *Journal of Economic Dynamics and Control*, 12 (2;3), 279-332. Pesaran, H., & Timmermann, A. (1994). Forecasting Stock Returns: An Examination of Stock Market Trading in the Presence of Transaction Costs. *Journal of Forecasting*, 13 (4), 335-367. Phillips, P. C. B. (1987). Time Series Regression with a Unit Root. *Econometrica*, 55 (2), 277-301. Phillips, P. C. B., & Perron, P. (1988). Testing for a Unit Root in Time Series Regression. *Biometrika*, 75 (2), 335-346. Poon, S., & Taylor, S. J. (1991). Macroeconomic Factors and U.K. Stock Market. *Journal of Business Finance and Accounting*, 18 (5), 619-636. Rafferty, T. (2005). The Effects of Expected and Unexpected Volatility on Long-Run Growth: Evidence from 18 Developed Economies. *Southern Economic Journal*, 71 (3), 582-591. Reinganum, M. R. (1981). Misspecification of Capital Asset Pricing: Empirical Anomalies Based on Earnings Yields and Market Values. *Journal of Financial Economics*, 9 (1), 19-46. Rozeff, M. S. (1974). Money and Stock Prices: Market Efficiency and the Lag in Effect of Monetary Policy. *Journal of Financial Economics*, 1 (3), 245-302. Sabri, N. R. (2004). Stock Return Volatility and Market Crisis in Emerging Economies. *Review of Accounting & Finance*, 3 (3), 59-83. Sadorsky, P. (1999). Oil Price Shocks and Stock Market Activity. *Energy Economics*, 21 (5), 449-469. Shapiro, A. C. (1974). Exchange Rate Changes, Inflation and the Value of the Multinational Corporation. *Journal of Finance*, 30 (2), 485-502. Siklos, P., & Kwok, B. (1999). Stock Returns and Inflation: A New Test of Competing Hypotheses. *Applied Financial Economics*, 9 (6), 567-581. Sims, C. A. (1980). Macroeconomics and Reality. *Econometrica*, 48 (1), 1-48. Sims, C. A. (1992). Interpreting the Macroeconomic Time Series Facts: The Effects of Monetary Policy. *European Economic Review*, 36 (5), 975-1000. Smith, C. (1992). Stock Markets and the Exchange Rate: A Multi Country Approach. *Journal of Macroeconomics*, 14 (4), 607-629. Soenen, L., & Hennigar, E. (1988). An Analysis of Exchange Rates and Stock Prices- The US Experience between 1980s and 1986. *Akron Business and Economic Review*, 19 (4), 71-76. Solnik, B. (1987). Using Financial Prices to Test Exchange Models. A Note. *Journal of Finance*, 42 (1), 141-149. Tessaromatis, N. (2003). Stock Market Sensitivity to Interest Rates and Inflation. Working Paper, EFMA 2003 Meeting, Helsinki, Finland. Thorbecke, W., & Alami, T. (1994). The Effect of Changes in the Federal Funds Rate Target on Stock Prices in the 1970s. *Journal of Economics and Business*, 46 (1), 13-19. Tornell, A., & Velasco, A. (1995). Fixed versus Flexible Exchange Rates: Which Provides More Fiscal Discipline? National Bureau of Economic Research Working Paper, no.5108. Vygodina, A. V. (2006). Effects of Size and International Exposure of the US Firms on the Relationship between Stock Prices and Exchange Rates. *Global Finance Journal*, 17 (2), 214-223. Wahlroos, B., and Berglund, T. (1986). Stock Returns, Inflationary Expectations and Real Activity. *Journal of Banking and Finance*, 10 (3), 377-389. Werner, A. M. (1992). Exchange Rates and Target Zone Width. *Economics Letters*, 40 (4), 455-457.