Empirics of Financial Markets 2020/2021

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Topics and articles

1. **Factor models of rates of return and construction of optimal investment portfolios**
    a. Theoretical basis: C. Alexander, Market Risk Analysis, t. II, chapter 1
    b. Sample articles:
        i. Cagnetti, Arduino, Capital Asset Pricing Model and Arbitrage Pricing Theory in the Italian Stock Market; an Empirical Study, Edinburgh Research Archive, 2002
        ii. Choudhary, Kapil, Sakshi Choudhary, Testing Capital Asset Pricing Model: Empirical Evidences from Indian Equity Market, *Eurasian Journal of Business and Economics,* 2010, 3(6), 127-138
        iii. Czapkiewicz Anna, Tomasz Wójtowicz, The four-factor asset pricing model on the Polish stock market, *Economic Research – Ekonomska Istrazivanja,* 27(1), 771-783, 2014
        iv. Fama, Eugene F., Kenneth R. French, International tests of a five-factor asset pricing model, *Journal of Financial Economics,* 123 (2017), 441-463
        v. Holovatiuk, Olha, Cryptocurrencies as an asset class in portfolio optimization, *Central European Economic Journal,* 7(1), 33-55, 2020.
        vi. Kalayci, Can B., Okkes Ertenlice, Mehmet Anil Akbay, A comprehensive review of deterministic models and applications for mean-variance portfolio optimization, *Expert Systems with Applications,* 125 (2019), 345-368
        vii. Nguyen, Sang Phu, Toan Luu Duc Huynh, Portfolio optimization from a Copulas-CJR-GARCH-EVT-CVAR model: Empirical evidence from ASEAN stock indexes, *Quantitative Finance and Economics,* 3(3), 562-585, 2019
        viii. Zhang, Jianhua; C. Wihlborg. „CAPM in Up and Down Markets: Evidence from Six European Emerging Markets". *Journal of Emerging Market Finance* 9:2 (2010), 229-255.
2. **Principal component analysis and its application in finance**
    a. Theoretical basis: C. Alexander, Market Risk Analysis, t. II, chapter 2
    b. Sample articles:
        i. Armeanu, Daniel, A. Enciu, C. Obreja, S. Cioaca. "The effect of the financial crisis on the returns of the CEE capital markets, 2016.
        ii. Diaz, Antonio I in., A Principal Component Analysis of the Spanish Volatility Term Structure, *International Research Journal of Finance and Economics,* 49 (2010)150-155
        iii. Gu, Shihau, Bryan Kelly, Dacheng Xiu, Empirical asset pricing via machine learning, *NBER Working Paper* 25398, 2019.
        iv. Kristjanpoller, Werner, Marcel C. Minutolo, A hybrid volatility forecasting framework integrating GARCH, artificial neural network, technical analysis and principal components analysis, *Expert Systems With Applications,* 109 (2018), 1-11
        v. Kritzman, Mark, et al. "Principal components as a measure of systemic risk. "*The Journal of Portfolio Management* 37.4 (2011): 112-126.
3. **Modeling of volatility - GARCH models**
    a. Theoretical basis: C. Alexander, Market Risk Analysis, t. II, chapter 3-4
    b. Sample articles:
        i. Arellano, Miguel, Gabriel Rodriguez, Empirical modeling of high-income and emerging stock and Forex market return volatility using Markov-switching GARCH models, *North American Journal of Economics and Finance,* 52 (2020)

ii. Bentes, S.R. "On the Conditional Behavior of Stock Market Volatility: A Sub-Sample Analysis Using the FIGARCH Approach for Developed and Emerging Markets". *Acta Physica Polonica A*, 129 (2016), 997-1003.
iii. Cheong, Chin Wen et al., Asymmetry and long-memory volatility: Some empirical evidence using GARCH, *Physica A,* 373 (2007), 651-664
iv. Dritsaki, Chaido, An Empirical Evaluation in GARCH Volatility Modeling: Evidence from the Stockholm Stock Exchange, *Journal of Mathematical Finance,* 2017, 7, 366-390
v. Epaphra, Manamba, Modeling Exchange Rate Volatility: Application of the GARCH and EGARCH Models, *Journal of Mathematical Finance,* 2017, 7, 124-143
vi. Liu, Hung-Chun, Jui-Cheng Hung, Forecasting S&P-100 stock index volatility: The role of volatility asymmetry and distributional assumption in GARCH models, *Expert Systems with Applications,* 37 (2010), 4928-4934
vii. Petrica, Andrea-Cristina, Stelian Stancu, Empirical Results of Modeling EUR/RON Exchange Rate using ARCH, GARCH, EGARCH, TARCH and PARCH models, *Romanian Statistical Review*, 1/2017
viii. Sun, Hao, Bo Yu, Forecasting Financial Returns Volatility: A GARCH-SVR Model, *Computational Economics,* 2020, 55, 451-471
ix. Wang, Lu et al., Forecasting stock price volatility: New evidence from the GARCH-MIDAS model, *International Journal of Forecasting,* 36 (2020), 684-694

4. Stationary time series and market efficiency

a. Theoretical basis: C. Alexander, Market Risk Analysis, t. II, chapter 5
b. Sample articles:
i. Aktan, Ceyda, Perihan Iren, Tolga Omay, Market development and market efficiency: evidence based on nonlinear panel unit root tests, *European Journal of Finance,* 25-11, 979-993, 2019
ii. Ali, Sajid et al., Stock market efficiency: A comparative analysis of Islamic and conventional stock market, *Physica A,* 503 (2018), 139-153
iii. Borges, maria Rosa, Efficient market hypothesis in European stock markets, *European Journal of Finance,* 1-7, 711-726, 2010
iv. Ho, Yang et al., Market efficiency of the top market-cap cryptocurrencies: Further evidence from a panel framework, *Finance Research Letters,* 31 (2019), 138-145
v. Kilon, Jarosław, P. Jamróz. "Informational (in)efficiency of the Polish Stock Exchange". *Procedia* 213 (2015), 390-396.
vi. Khrapko, Vladimir, Testing the weak-form efficiency hypothesis in the Ukrainian stock market versus those of the USA, Russia, and Poland, *Ekonomika,* 2013, 92 (1), 108-121
vii. Khursheed, Ambreen et al., Adaptive market hypothesis: An empirical analysis of time-varying market efficiency of cryptocurrencies, *Cogent,* 2020, 8
viii. Simoes, Mario Domingues et al., Assessment of Market Efficiency in Argentina, Brazil, and Chile: an Event Study of Mergers and Acquisitions, *Brazilian Administration Review,* 9, 2, 229-245, 2012

5. Cointegration of time series and its applications in finance

a. Theoretical basis: C. Alexander, Market Risk Analysis, t. II, chapter 5
b. Sample articles:
i. Assidenou, Komlavi Elubueni, Cointegration of Major Stock Market Indices during the 2008 Global Financial Distress, *International Journal of Economics and Finance,* 1 (2), 2011
ii. Cicek, Macide, A cointegration test for Turkish foreign exchange market, *Asian Economic and Financial Review,* 2014, 4 (4), 451-471

iii. Kolaiti, Theoplasti et al., Volatility Transmission across Financial Markets: A Semiparametric Analysis, *Journal of Risk and Financial Management,* 2020, 13, 160
iv. Makovsky, Petr, Modern approaches to efficient market hypothesis of FOREX – the central European case, *Procedia*, 14 (2014)397-406
v. Rizwanullah, Muhammad et al., Exploring the Cointegration Relation among Top Eight Asian Stock Markets, *Open Journal of Business and management,* 2020, 8, 1076-1088.

6. Algorithmic investment systems, derivatives pricing, new asset classes and risk modelling

a. Theoretical basis: Jabłecki J., Kokoszczyński R., Sakowski P., Ślepaczuk R., Wójcik P., *Volatility as an Asset Class. Obvious Benefits and Hidden Risks*, Peter Lang, Frankfurt am Main, 2015. DOI: 10.3726/978-3-653-04787-5
b. Sample articles:
   i. Bilyk O., Sakowski P., Ślepaczuk R., 2020, *Investing in VIX futures based on rolling GARCH models forecasts*, Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 10/2020 (316), https://www.wne.uw.edu.pl/files/6515/8949/0792/WNE_WP316.pdf
   ii. Bollin B., Ślepaczuk R., 2020, *Variance Gamma Model in Hedging Vanilla and Exotic Options,* Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 31/2020 (337), https://www.wne.uw.edu.pl/index.php/download_file/5835/4919/
   iii. *Buy Q., Ślepaczuk R.,* 2020, *Applying Hurst Exponent in Pair Trading Strategies*, Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 35/2020 (341), https://www.wne.uw.edu.pl/index.php/download_file/5988/4922/
   iv. Jabłecki J., Kokoszczyński R., Sakowski P., Ślepaczuk R., Wójcik P., 2014, *Does historical VIX term structure contain valuable information for predicting VIX futures?,* Dynamic Econometric Models 14, pp. 5-28, http://apcz.umk.pl/czasopisma/index.php/DEM/article/download/DEM.2014.001/5249, DOI: http://dx.doi.org/10.12775/DEM.2014.001
   v. Kielak K., Ślepaczuk R., 2020, *Value at Risk - the comparison of state-of-the-arts models on various assets,* Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 28/2020 (334), https://www.wne.uw.edu.pl/index.php/download_file/5800/4919/
   vi. Kijewski M., Ślepaczuk R., 2020, *Predicting prices of S&P500 index using classical methods and recurrent neural networks*, Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 27/2020 (333), shttps://www.wne.uw.edu.pl/index.php/download_file/5769/4919/
   vii. Kość K., Sakowski P., Ślepaczuk R., 2019, *Momentum and Contrarian Effects on the Cryptocurrency Market*, Physica A 523, pp. 691-701, https://doi.org/10.1016/j.physa.2019.02.057, https://www.sciencedirect.com/science/article/pii/S037843711930216X?dgcid=author
   viii. Latoszek M., Ślepaczuk R., 2020, *Does the inclusion of exposure to volatility into diversified portfolio improve the investment results? Portfolio construction from the perspective of a Polish investor*, Economics and Business Review, Volume 6 (20), Number 1, 46-81, DOI: 10.18559/ebr.2020.1.3, https://www.ebr.edu.pl/pub/2020_1_46.pdf
   ix. Ryś P., Ślepaczuk R., 2018, *Machine learning in algorithmic trading strategy optimization – design and time efficiency*, Central European Economic Journal, 5(1), pp. 206-229, https://content.sciendo.com/view/journals/ceej/5/52/article-p206.xml, https://doi.org/10.1515/ceej-2018-0021

x. Sakowski P., Ślepaczuk R., Wywiał M., 2016, *Can we invest based on equity risk premia and risk factors from multi-factor models?*, Economics and Business Review 2(16), No. 3, pp. 78-98, http://www.ebr.edu.pl/pub/2016_3_78.pdf, DOI: 10.18559/ebr.2016.3.6

xi. Sakowski, P., Ślepaczuk R., Wywiał M., 2016, *Cross-sectional returns with volatility regimes from diverse portfolio of emerging and developed equity indices*, eFinanse Vol. 12, No. 2, pp. 23-35, https://e-finanse.com/archives/?number=45&id=11, DOI: 10.14636/1734-039X_12_2_003

xii. Sakowski P., Turovtseva A., Verification of Investment Opportunities on the Cryptocurrency Market within the Markowitz Framework, Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 41/2020 (347), https://www.wne.uw.edu.pl/files/5016/1041/4810/WNE_WP347.pdf

xiii. Sakowski P., Turovtseva A., *DOES BITCOIN IMPROVE INVESTMENT PORTFOLIO EFFICIENCY?,* Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 41/2020 (347), https://www.wne.uw.edu.pl/files/4116/1062/6435/WNE_WP348.pdf

xiv. Ślepaczuk R., Sakowski P., Zakrzewski G., 2018, *Investment strategies beating the market. What can we squeeze from the market?*, eFinanse Vol.14, no. 4, pp. 36-55, https://e-finanse.com/current-issue/?number=59&id=421, DOI: 10.2478/fiqf-2018-0026

xv. *Wabik I., Ślepaczuk R.,* 2020, *The impact of the results of football matches on the stock prices of soccer clubs,* Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 35/2020 (341), https://www.wne.uw.edu.pl/index.php/download_file/5900/4919/

xvi. Wysocki M., Ślepaczuk R., 2020, *Artificial Neural Networks Performance in WIG20 Index Options Pricing*, Working Papers of Faculty of Economic Sciences, University of Warsaw, WP 19/2020 (325), https://www.wne.uw.edu.pl/files/2615/9372/4397/WNE_WP325.pdf

xvii. Zenkova M., Ślepaczuk R., 2018*, Robustness of Support Vector Machines in Algorithmic Trading on Cryptocurrency Market,* Central European Economic Journal, 5(1), pp. 186-205, https://content.sciendo.com/view/journals/ceej/5/52/article-p186.xml, https://doi.org/10.1515/ceej-2018-0022