Complexity and Some Numerical *Algorithmic Turning-Point* Problems Inherent in Excessive Outstanding Shares

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Complex Systems, Multi-Sided Incentives and Risk Perception in Companies

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Abstract

Having excessive numbers of shares outstanding is either common or prevalent among listed companies in emerging markets and especially in Central/Eastern European, African and Asian stock markets (i.e. where such companies usually have between two-times and twelve-times the average numbers of outstanding shares of listed companies in developed countries like the US, UK and Japan, on an un-diluted basis)—and this condition can cause behavioral anomalies and sometimes contravenes established finance theories.

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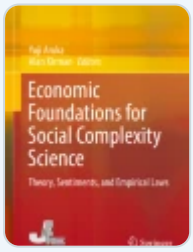

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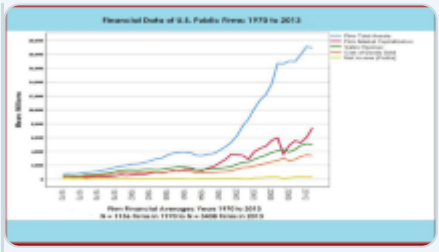

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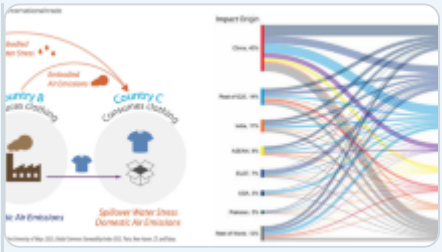

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Notes

1. See Othman (2012), Domshlak et al. (2011), Filipe and Fred (2011), Melnik et al. (2013), Miklashevich (2003), and Arthur (1999).

2. See Wong et al. (2017) and Xia (2011).

3. See Chen et al. (2013), Cozman (2010), Seneta (2013), Li and Du (2007), and Lan and Zhang (2017).

References

Abdullah, S., Yusof, N., & Nor, M. (2010). Financial Restatements and Corporate Governance Among Malaysian Listed Companies. *Managerial Auditing Journal, 25*(6), 526–552.

Article Google Scholar

Ahmed, M., Chai, W., Ding, X., et al. (2009). *Statistical Arbitrage in High Frequency Trading Based on Limit Order Book Dynamics*. Working Paper. http://web.stanford.edu/class/msande444/2009/2009Projects/2009-2/MSE444.pdf.

Albrecher, H., & Kainhofer, R. (2002). Risk Theory with a Nonlinear Dividend Barrier. *Computing, 68*(4), 289–311.

Google Scholar

An, H., & Zhang, T. (2013). Stock Price Synchronicity, Crash Risk, and Institutional Investors. *Journal of Corporate Finance, 21,* 1–15.

Article Google Scholar

Armstrong, C., Larcker, D., Ormazabal, G., & Taylor, D. (2013). The Relation Between Equity Incentives and Misreporting: The Role of Risk-Taking Incentives. *Journal of Financial Economics, 109*(2), 327–350.

Article Google Scholar

Arthur, W. B. (1999). Complexity and the Economy. *Science, 284*, 107–109.

Google Scholar

Ascioglu, A., Hegde, S., Krishnan, G., & McDermott, J. (2012). Earnings Management and Market Liquidity. *Review of Quant Finance & Accounting, 38*, 257–274.

Article Google Scholar

Azcue, P., & Muler, N. (2015). Optimal Dividend Payment and Regime Switching in a Compound Poisson Risk Model. *SIAM Journal on Control & Optimization, 53*(5), 3270–3298.

Article Google Scholar

Baber, W., Fairfield, P., & Haggard, J. (1991). The Effect of Concern About Reported Income on Discretionary Spending Decisions: The Case of Research and Development. *Accounting Review, 66*(4), 818–829.

Google Scholar

Bai, L., & Paulsen, J. (2010). Optimal Dividend Policies with Transaction Costs for a Class of Diffusion Processes. *SIAM Journal on Control & Optimization, 48*(8), 4987–5008.

Google Scholar

Baltas, I., Xepapadeas, A., & Yannacopoulos, A. (2018). Robust Portfolio Decisions for Financial Institutions. *Journal of Dynamics & Games, 5*(2), 61–94.

Google Scholar

Baltas, I., & Yannacopoulos, A. (2016). Uncertainty and Inside Information. *Journal Of Dynamics & Games, 3*(1), 1–24.

Article Google Scholar

Bambaci, J., Bender, J., et al. (2013). *Harvesting Risk Premia for Large Scale Portfolios—Analysis of Risk Premia Indices for the Ministry of Finance, Norway*. https://www.regjeringen.no/contentassets/f453b48778c342d9a7ed8d6810d6cea4/harvesting_risk.pdf.

Bar-Yosef, S., & Prencipe, A. (2013). The Impact of Corporate Governance and Earnings Management on Stock Market Liquidity in a Highly Concentrated Ownership Capital Market. *Journal of Accounting, Auditing and Finance, 28,* 292–316.

Google Scholar

Battiston, S., & Glattfelder, J. B. (2009). Backbone of Complex Networks of Corporations: The Flow of Control. *Physics Review-E, 80,* 036104.

Article Google Scholar

Beatty, A., & Weber, J. (2006). Accounting Discretion in Fair Value Estimates: An Examination of SFAS 142 Goodwill Impairments. *Journal of Accounting Research, 44,* 257–288.

Article Google Scholar

Bekaert, G., Harvey, C., & Lundblad, C. (2007). Liquidity and Expected Returns: Lessons from Emerging Markets. *Review of Financial Studies, 20,* 1783–1832.

Article Google Scholar

Bergstresser, D., & Philippon, T. (2006). CEO Incentives and Earnings Management. *Journal of Financial Economics, 80,* 511–529.

Article Google Scholar

Boeing, G. (2016). Visual Analysis of Nonlinear Dynamical Systems: Chaos, Fractals, Self-Similarity and the Limits of Prediction. *Systems, 4*(4), 37.

Google Scholar

Bolton, P., Mehran, H., & Shapiro, J. (2011). *Executive Compensation and Risk Taking*. FRB of New York Staff Report No. 456.

Google Scholar

Brink, A., & Rankin, F. (2014). The Effects of Risk Preference and Loss Aversion on Individual Behavior Under Bonus, Penalty, and Combined Contract Frames. *Behavioral Research in Accounting, 25*(2), 145–170.

Article Google Scholar

Brockman, P., Chung, D., & Perignon, C. (2009). Commonality in Liquidity: A Global Perspective. *Journal of Financial and Quantitative Analysis, 44,* 851–882.

Article Google Scholar

Bushman, R., & Piotroski, J. (2005). Financial Reporting Incentives for Conservative Accounting: The Influence of Legal and Political Institutions. *Journal of Accounting & Economics, 42,* 107–148.

Google Scholar

Carlin, B. I. (2009). Strategic Price Complexity in Retail Financial Markets. *Journal of Financial Economics, 91*(3), 278–287.

Article Google Scholar

Cecchini, M., Aytug, H., et al. (2010). Detecting Management Fraud in Public Companies. *Management Science, 56,* 1146–1160.

Article Google Scholar

Chandra, A., & Thenmozhi, M. (2017). Behavioural Asset Pricing: Review and Synthesis. *Journal of Interdisciplinary Economics, 29,* 1–31.

Google Scholar

Chen, S., Li, Z., & Zeng, Y. (2018). Optimal Dividend Strategy for a General Diffusion Process with Time-Inconsistent Preferences and Ruin Penalty. *SIAM Journal on Financial Mathematics, 9*(1), 274–314.

Article Google Scholar

Chen, Z., Wu, P., & Li, B. (2013). A Strong Law of Large Numbers for Non-additive Probabilities. *International Journal of Approximate Reasoning, 54*(3), 365–377.

Article Google Scholar

Cornett, M., McNutt, J., & Tehranian, H. (2009). Corporate Governance and Earnings Management at Large U.S. Bank Holding Companies. *Journal of Corporate Finance, 15,* 412–430.

Article Google Scholar

Cozman, F. (2010). Concentration Inequalities and Laws of Large Numbers Under Epistemic and Regular Irrelevance. *International Journal of Approximate Reasoning, 51,* 1069–1084.

Article Google Scholar

Dellnitz, M., & Junge, O. (1999). On the Approximation of Complicated Dynamical Behavior. *SIAM Journal of Numerical Analysis, 36*(2), 491–515.

Article Google Scholar

Deprez, O. (2004). Discussion of “Optimal Dividends: Analysis with Brownian Motion”. *North American Actuarial Journal, 8*(2), 111.

Article Google Scholar

DeYoung, R., Peng, E., & Meng, Y. (2013). Executive Compensation and Business Policy Choices at U.S. Commercial Banks (October 1, 2010). *Journal of Financial and Quantitative Analysis, 48*(1), 165–196.

Google Scholar

Domshlak, C., Hullermeier, E., Kaci, S., & Prade, H. (2011). Preferences in AI: An Overview. *Artificial Intelligence, 17*(7–8), 1037–1052.

Article Google Scholar

Dreschler, I. (2013). Uncertainty, Time-Varying Fear, and Asset Prices. *Journal of Finance, 68*(5), 1843–1889.

Article Google Scholar

Du, K. (2016, August). *Investor Expectations, Earnings Management, and Asset Prices*. Working Paper. Pennsylvania State University, USA. Available at SSRN https://ssrn.com/abstract=2852553.

Dutta, S., Biswal, M., et al. (2018). Fuzzy Stochastic Price Scenario Based *Portfolio Selection* and Its Application to BSE Using Genetic Algorithm. *Applied Soft Computing, 62,* 867–891.

Article Google Scholar

Erkens, D., Hung, M., & Matos, P. (2012). Corporate Governance in the 2007–2008 Financial Crisis: Evidence from Financial Institutions Worldwide. *Journal of Corporate Finance, 18*(2), 389–411.

Article Google Scholar

Fama, E., & French, K. (2008). Dissecting Anomalies. *Journal of Finance, 63,* 1653–1678.

Article Google Scholar

Fang, Y., & Wu, R. (2009). Optimal Dividends in the Brownian Motion Risk Model with Interest. *Journal of Computational and Applied Mathematics, 229*(1), 145–151.

Article Google Scholar

Feduzi, A., & Runde, J. (2014). Uncovering Unknown Unknowns: Towards a Baconian Approach to Management Decision-Making. *Organizational Behavior and Human Decision Processes, 124*(2), 268–283.

Article Google Scholar

Filipe, J., & Fred, A. (Eds.). (2011). *Agents and Artificial Intelligence: Third International Conference, ICAART 2011, Rome, Italy*. Berlin: Springer.

Google Scholar

Fischer, P., & Louis, H. (2008). Financial Reporting and Conflicting Managerial Incentives: The Case of Management Buyouts. *Management Science, 54,* 1700–1714.

Google Scholar

Flannery, M., Kwan, S., & Nimalendran, M. (2013). The 2007–09 Financial Crisis and Bank Opaqueness. *Journal of Financial Intermediation, 22,* 55–84.

Article Google Scholar

Forbes, K., Warnock, J., & Francis, E. (2012). Capital Flow Waves: Surges, Stops, Flight, and Retrenchment. *Journal of International Economics, 88*(2), 235–251.

Article Google Scholar

Francis, W., Hasan, I., & Li, L. (2014). *Abnormal Real Operations, Real Earnings Management, and Subsequent Crashes in Stock Prices*. Bank of Finland Research Discussion Papers #19; 2014. http://www.suomenpankki.fi/pdf/173785.pdf.

Fudenberg, D., & Tirole, J. (1995). A Theory of Income and Dividend Smoothing Based on Incumbency Rents. *Journal of Political Economics, 103,* 75–93.

Article Google Scholar

Gao, L., & Kling, G. (2012). The Impact of Corporate Governance and External Audit on Compliance to Mandatory Disclosure Requirements in China. *Journal of International Accounting, Auditing and Taxation, 21*(1), 17–31.

Article Google Scholar

Gao, H., & Yin, C. (2008). The Perturbed Sparre Andersen Model with a Threshold Dividend Strategy. *Journal of Computational and Applied Mathematics, 220*(1–2), 394–408.

Article Google Scholar

Ge, W., & Kim, J. (2013a). Real Earnings Management and the Cost of New Corporate Bonds. *Journal of Business Research, 67,* 641–647.

Google Scholar

Ge, W., & Kim, J. B. (2013b). Boards, Takeover Protection, and Real Earnings Management. *Review of quantitative Finance & Accounting, 43,* 651–682.

Google Scholar

Gerber, H., & Shiu, E. (2006). On Optimal Dividends: From Reflection to Refraction. *Journal of Computational and Applied Mathematics, 186*(1), 4–22.

Article Google Scholar

Goncalo, J., & Duguid, M. (2008). Hidden Consequences of the Group-Serving Bias: Causal Attributions and the Quality of Group Decision Making. *Organizational Behavior and Human Decision Processes, 107*(2), 219–233.

Article Google Scholar

Gul, F., & Leung, S. (2004). Board Leadership, Outside Directors' Expertise and Voluntary Corporate Disclosures. *Journal of Accounting and Public Policy, 23*(5), 351–379.

Google Scholar

Gülpınar, N., & Çanakoğlu, E. (2017). Robust Portfolio Selection Problem Under Temperature Uncertainty. *European Journal of Operational Research, 256*(2), 500–523.

Article Google Scholar

Hall, B., & Liebman, J. (1998). Are CEOs Really Paid Like Bureaucrats? *The Quarterly Journal of Economics, 113,* 653–691.

Article Google Scholar

Han, Y., & Li, P. (2017). An Empirical study of Chance-Constrained Portfolio Selection Model. *Procedia Computer Science, 122,* 1189–1195.

Article Google Scholar

Haw, I., Hu, B., Hwang, L., & Wu, W. (2004). Ultimate Ownership, Income

Management and Legal and Extra-Legal Institutions. *Journal of Accounting Research, 42,* 423–462.

Article Google Scholar

Healy, P. (2005). The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting Economics, 7,* 85–107.

Article Google Scholar

Hermalin, B., & Weisbach, M. (2003). Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature. *FRBNY Economic Policy Review, 4*, 7–26.

Google Scholar

Hermalin, B., & Weisbach, M. (2012). Information Disclosure and Corporate Governance. *Journal of Finance, 67*(1), 195–234.

Article Google Scholar

Hou, D., & Xu, Z. (2016). A Robust Markowitz Mean-Variance Portfolio Selection Model with an Intractable Claim. *SIAM Journal on Financial Mathematics, 7*(1), 124–151.

Article Google Scholar

Hribar, P., Jenkins, N., & Johnson, W. B. (2006). Stock Repurchases as an Earnings Management Device. *Journal of Accounting and Economics, 41,* 3–27.

Article Google Scholar

Huang, X., & Di, H. (2016). Uncertain *Portfolio Selection* with Background Risk. *Applied Mathematics and Computation, 276,* 284–296.

Article Google Scholar

Hutchinson, M. (2002). An Analysis of the Association Between Firms Investment Opportunities, Board Composition and Firm Performance. *Asia Pacific Journal of Accounting and Economics, 9,* 17–39.

Article Google Scholar

Hutton, A., Marcus, A., & Tehranian, H. (2009). Opaque Financial Reports, R Square, and Crash Risk. *Journal of Financial Economics, 94,* 67–86.

Article Google Scholar

Jana, P., Roy, T., & Mazumder, S. (2009). Multi-objective Possibilistic Model for Portfolio Selection with Transaction Cost. *Journal of Computational and Applied Mathematics, 228*(1), 188–196.

Article Google Scholar

Jeanblanc-Picqué, M., & Shiryaev, A. (1995). Optimization of the Flow of Dividends. *Russian Mathematical Surveys, 20,* 257–277.

Article Google Scholar

Johnson, S., Boone, P., Breach, A., & Friedman, E. (2000). Corporate Governance in the Asia Financial Crisis. *Journal of Financial Economics, 58,* 141–186.

Article Google Scholar

Kakushadze, Z. (2016). *On Origins of Alpha*. https://arxiv.org/ftp/arxiv/papers/1511/1511.01395.pdf.

Keresteciogl u, F., & Cetin, I. (2004). Optimal Input Design for Detection of Changes Towards Unknown Hypothesis. *International Journal of Systems Science, 35*(7), 435–444.

Article Google Scholar

Kim, H., Kwon, O., & Oh, G. (2016). A Causality Between Fund Performance and Stock Market. *Physica A: Statistical Mechanics and its Applications, 443,* 439–450.

Article Google Scholar

Kim, J., Li, Y., & Zhang, L. (2011a). Corporate Tax Avoidance and Stock Price Crash Risk: Firm-Level Analysis. *Journal of Financial Economics, 100,* 639–662.

Article Google Scholar

Kim, J., Li, Y., & Zhang, L. (2011b). CFOs Versus CEOs: Equity Incentives and Crashes. *Journal of Financial Economics, 101,* 713–730.

Article Google Scholar

Kim, J., & Zhang, L. (2013). Accounting Conservatism and Stock Price Crash Risk: Firm-Level Evidence. *Contemporary Accounting Research, 33,* 412–441.

Google Scholar

Kim, J., & Zhang, L. (2014). Financial Reporting Opacity and Expected Crash Risk: Evidence from Implied Volatility Smirks. *Contemporary Accounting Research, 31,* 851–875.

Google Scholar

Koenigsgruber, R., & Stefan, P. (2014). Earnings Management and Participation in Accounting Standard-setting. *Central European Journal of Operations Research, 23*(1), 31–52.

Google Scholar

Kuehn, C., Malavolta, G., & Rasmussen, M. (2018). Early-Warning Signals for

Bifurcations in Random Dynamical Systems with Bounded Noise. *Journal of Mathematical Analysis and Applications, 464*(1), 58–77.

Article Google Scholar

Kwan, S. (2010). *Financial Crisis and Bank Lending*. Federal Reserve Bank of San Francisco. Working Paper.

Google Scholar

Kwon, Y. (2005). Accounting Conservatism and Managerial Incentives. *Management Science, 51,* 1626–1632.

Article Google Scholar

Lan, Y., & Zhang, N. (2017). *Strong Limit Theorems for Weighted Sums of Negatively Associated Random Variables in Nonlinear Probability*. https://arxiv.org/pdf/1706.05788.pdf.

Lei, Q., Lin, B., & Wei, M. (2013). Types of Agency Cost, Corporate Governance and Liquidity. *Journal of Accounting and Public Policy, 32,* 147–172.

Google Scholar

Li, B., Zhu, Y., et al. (2018). Multi-period Portfolio Selection Problem Under Uncertain Environment with Bankruptcy Constraint. *Applied Mathematical Modeling, 56,* 539–550.

Article Google Scholar

Li, D., & Du, Y. (2007). *Artificial Intelligence with Uncertainty*. Boca Raton: CRC Press.

Google Scholar

Li, E., Livdan, D., & Zhang, L. (2009). Anomalies. *The Review of Financial Studies, 22*(11), 4302–4331.

Google Scholar

Lin, J., & Hwang, M. (2010). Audit Quality, Corporate Governance, and Earnings Management: A Meta-Analysis. *International Journal of Auditing, 14*(1), 55–77.

Article Google Scholar

Liu, X., & Tse, C. (2012). Dynamics of Network of Global Stock Market. *Accounting & Finance Research, 1,* 1–12.

Article Google Scholar

Liu, J., Wang, W., et al. (2010). A novel Fuzzy Framework for Nonlinear System Control. *Fuzzy Sets and Systems, 161*(21), 2746–2759.

Article Google Scholar

Ma, Y., Zhuang, X. T., & Li, L. (2011). Research on the Relationships of the Domestic Mutual Investment of China Based on the Cross-Shareholding Networks of the Listed Companies. *Physica-A, 390,* 749–759.

Article Google Scholar

Mardjono, A. (2005). A Tale of Corporate Governance: Lessons Why Firms Fail. *Managerial Auditing Journal, 20*(3), 272–283.

Article Google Scholar

Marquardt, C., & Wiedman C. (2005). Earnings Management Through Transaction Structuring: Contingent Convertible Debt And Diluted EPS. *Journal of Accounting Research, 43,* 205–243.

Google Scholar

Marquis, J., Gel, E., et al. (2015). Impact of Number of Interactions, Different Interaction Patterns, and Human Inconsistencies on Some Hybrid Evolutionary Multiobjective Optimization Algorithms. *Decision Sciences, 46*(5), 981–1006.

Article Google Scholar

Mashayekhi, B., & Bazaz, M. (2008). Corporate Governance and Firm Performance in Iran. *Journal of Contemporary Accounting & Economics, 4*(2), 156–172.

Article Google Scholar

Melnik, S., Ward, J., Gleeson, J., & Porter, M. (2013). Multi-stage Complex Contagions. *Chaos, 23,* 013124. http://dx.doi.org/10.1063/1.4790836.

Miklashevich, I. (2003). Mathematical Representation of Social Systems: Uncertainty and Optimization of Social System Evolution. *Non Linear Phenomena in Complex Systems, 6*(2), 678–686.

Google Scholar

Milch, K., Weber, E., Appelt, K., et al. (2012). From Individual Preference Construction to Group Decisions: Framing Effects and Group Processes. *Organizational Behavior and Human Decision Processes, 108*(2), 242–255.

Article Google Scholar

Mohammed, S., & Ringseis, E. (2001). Cognitive Diversity and Consensus in Group Decision Making: The Role of Inputs, Processes, and Outcomes. *Organizational Behavior and Human Decision Processes, 85*(2), 310–335.

Article Google Scholar

Moon, H., Conlon, D., Humphrey, S., et al. (2003). Group Decision Process and Incrementalism in Organizational Decision Making. *Organizational Behavior and Human Decision Processes, 92*(1–2), 67–79.

Article Google Scholar

Nakano, M., & Nguyen, P. (2012). Board Size and Corporate Risk Taking: Further Evidence from Japan. *Corporate Governance: An International Review, 20*(4), 369–387.

Article Google Scholar

Nalpas, N., Simar, L., & Vanhems, A. (2017). Portfolio Selection in a Multi-moment Setting: A Simple Monte-Carlo-FDH Algorithm. *European Journal of Operational Research, 263*(1), 308–320.

Article Google Scholar

Nguyen, T., Sutton, N., & Pham, D. (2015). The Post-repurchase Announcement Drift: An Anomaly in Disguise? *Managerial Finance, 41*(2), 205–224.

Google Scholar

Nwogugu, M. (2006). Regret Minimization, Willingness-To-Accept-Losses and Framing. *Applied Mathematics and Computation, 179*(2), 440–450.

Google Scholar

Nwogugu, M. (2007). Decision-Making, Risk and Corporate Governance: A Critique of Methodological Issues in Bankruptcy/Recovery Prediction Models. *Applied Mathematics and Computation, 185*(1), 178–196.

Article Google Scholar

Nwogugu, M. (2013). Decision-Making, Sub-Additive Recursive “Matching” Noise

and Biases in Risk-Weighted Index Calculation Methods in In-Complete Markets with Partially Observable Multi-Attribute Preferences. *Discrete Mathematics, Algorithms & Applications, 5,* 1350020.

Google Scholar

Nwogugu, M. (2016). *Complexity and Some Numerical Turning-Point Problems Inherent in Excessive Outstanding Shares and International Portfolio Selection*. Available in www.ssrn.com.

Nwogugu, M. (2017a). The Historical and Current Concepts of “Plain” Interest Rates, Forward Rates and Discount Rates Are or Can Be Misleading. In *Anomalies in Net Present Value, Returns and Polynomials; And Regret Theory in Decision-Making*. Basingstoke: Palgrave Macmillan.

Google Scholar

Nwogugu, M. (2017b). Some Biases and Evolutionary Homomorphisms Implicit in the Calculation of Returns. In *Anomalies in Net Present Value, Returns and Polynomials; And Regret Theory in Decision-Making*. Basingstoke: Palgrave Macmillan.

Google Scholar

Nwogugu, M. (2017c). Regret Theory and Asset Pricing Anomalies in Incomplete Markets with Dynamic Unaggregated Preferences. In *Anomalies in Net Present Value, Returns and Polynomials; And Regret Theory in Decision-Making*. Basingstoke: Palgrave Macmillan.

Google Scholar

Nwogugu, M. (2017d). Spatio-Temporal Framing Anomalies in the NPV-MIRR-IRR Model and Related Approaches. In *Anomalies in Net Present Value, Returns and Polynomials; And Regret Theory in Decision-Making*. Basingstoke: Palgrave Macmillan.

Google Scholar

Omidi, F., Abbasi, B., & Nazemi, A. (2017). An Efficient Dynamic Model for Solving a Portfolio Selection with Uncertain Chance Constraint Models. *Journal of Computational and Applied Mathematics, 319,* 43–55.

Article Google Scholar

Othman, A. (2012). *Automated Market Making: Theory and Practice*. PHD Thesis. School of Computer Science, Computer Science Department, Carnegie Mellon University, USA. https://www.cs.cmu.edu/~aothman/abethesis.pdf.

Paese, P., Bieser, M., & Tubbs, M. (1993). Framing Effects and Choice Shifts in Group Decision Making. *Organizational Behavior and Human Decision Processes, 56*(1), 149–165.

Article Google Scholar

Pascoa, M. (1993). Approximate Equilibrium in Pure Strategies for Nonatomic Games. *Journal of Mathematical Economics, 22,* 223–241.

Article Google Scholar

Petrohilos-Andrianos, Y., & Xepapadeas, A. (2016). On the Evolution of Compliance and Regulation with Tax Evading Agents. *Journal of Dynamics & Games, 3*(3), 231–260.

Article Google Scholar

Peyer, U., & Vermaelen, T. (2009). The Nature and Persistence of Buyback Anomalies. *Review of Financial Studies, 22*(4), 1693–1745.

Google Scholar

Press, B. (1978). Flicker Noises in Astronomy and Elsewhere. *Comments in Astrophysics, 7*(4), 103–119.

Google Scholar

Qin, Z., Li, X., & Ji, X. (2009). Portfolio Selection Based on Fuzzy Cross-Entropy. *Journal of Computational and Applied Mathematics, 228*(1), 139–149.

Article Google Scholar

Quigley, T., & Hambrick, D. (2012). When the Former CEO Stays on as Board Chair: Effects on Successor Discretion, Strategic Change, and Performance. *Strategic Management Journal, 33,* 834–859.

Article Google Scholar

Rashid, A., De-Zoysa, A., Lodh, S., & Rudkin, K. (2010). Board Composition and Firm Performance: Evidence From Bangladesh. *Australasian Accounting Business and Finance Journal, 4*(1), 76–95. http://ro.uow.edu.au/aabfj/vol4/iss1/5/?utm_source=ro.uow.edu.au%2Faabfj%2Fvol4%2Fiss1%2F5&utm_medium=PDF&utm_campaign=PDFCoverPages.

Roehner, B. (2005). Stock Markets Are Not What We Think They Are: The Key Roles of Cross-Ownership and Corporate Treasury Stock. *Physica A: Statistical Mechanics and Its Applications, 347,* 613–625.

Article Google Scholar

Roychowdhury, S. (2006). Earnings Management Through Real Activities Manipulation. *Journal of Accounting and Economics, 42,* 335–370.

Article Google Scholar

Sánchez-Sánchez, F., & Vargas-Valencia, M. (2018). Games with Nested

Constraints Given by a Level Structure. *Journal of Dynamics & Games, 5*(2), 95–107.

Article Google Scholar

Seneta, E. (2013). A Tricentenary History of the Law of Large Numbers. *Bernoulli, 19*(4), 1088–1121.

Article Google Scholar

Shanteau, J., & Troutman, C. (1992). A Psychophysical Evaluation of Diminishing Returns in Riskless Decision Making. *Organizational Behavior and Human Decision Processes, 52*(3), 569–579.

Article Google Scholar

Siegel, J. (2005). Can Foreign Firms Bond Themselves Effectively by Submitting to U.S. Law? *Journal of Financial Economics, 75,* 319–359.

Article Google Scholar

Song, F. (2009). Intergroup Trust and Reciprocity in Strategic Interactions: Effects of Group Decision-Making Mechanisms. *Organizational Behavior and Human Decision Processes, 108*(1), 164–173.

Article Google Scholar

Song, Q., Liu, A., & Yang, S. (2017). Stock *Portfolio Selection* Using Learning-to-Rank Algorithms with News Sentiment. *Neurocomputing, 264,* 20–28.

Article Google Scholar

Szyszka, A. (2013). Asset-Pricing Anomalies and Investment Strategies. In *Behavioral Finance and Capital Markets*. New York: Palgrave Macmillan.

Chapter Google Scholar

Taksar, M. (2001). Optimal Risk and Dividend Distribution Control Models for an Insurance Company. *Mathematical Methods of Operations Research, 51,* 1–42.

Article Google Scholar

Taleb, N. (2009). Finiteness of Variance Is Irrelevant in the Practice of Quantitative Finance. *Complexity, 14*(3), 66–76.

Article Google Scholar

Tang, Y., Wu, J., & Zhang, L. (2014). Do Anomalies Exist Ex Ante? *Review of Finance, 18*(3), 843–875.

Google Scholar

Thanassoulis, J. (2013). Industry Structure, Executive Pay, and Short-Termism. *Management Science, 59,* 402–419.

Article Google Scholar

Tille, C., & Van Wincoop, E. (2008). *International Capital Flows Under Dispersed Information: Theory and Evidence*. Working Paper. http://people.virginia.edu/~ev4n/papers/Information_sep_26.pdf.

Tsamenyi, M., Enninful-Adu, E., & Onumah, J. (2007). Disclosure and Corporate Governance in Developing Countries: Evidence from Ghana. *Managerial Auditing Journal, 22*(3), 319–334.

Article Google Scholar

Vagais, D., & Van Dijk, M. (2011). *International Capital Flows and Liquidity*. http://www.tinbergen.nl/~sofie2012/papers/VagiasDijk2011.pdf.

Van Ginkel, W., & van Knippenberg, D. (2008). Group Information Elaboration and Group Decision Making: The Role of Shared Task Representations. *Organizational Behavior and Human Decision Processes, 105*(1), 82–97.

Article Google Scholar

Wang, B., Li, Y., & Watada, J. (2017). Multi-Period Portfolio Selection with Dynamic Risk/Expected-Return Level Under Fuzzy Random Uncertainty. *Information Sciences, 385–386,* 1–18.

Google Scholar

Weron, R. (2001). Levy-Stable Distributions Revisited: Tail Index > 2 Does Not Exclude the Levy-Stable Regime. *International Journal of Modern Physics-C, 12*(2), 209–223.

Article Google Scholar

Wong, K., Yam, S., & Zheng, H. (2017). Utility-Deviation-Risk Portfolio Selection. *SIAM Journal on Control & Optimization, 55*(3), 1819–1861.

Article Google Scholar

Wu, C., & Lerner, P. (2009). Price Volatility in the Context of Market Microstructure. In G. Gregoriou (Ed.), *Stock Market Volatility* (pp. 51–69). Boca Raton: Chapman and Hall/CRC.

Google Scholar

Wu, Q., & Robin, A. (2014). Firm Growth and the Pricing of Discretionary Accruals. *Review of Quant Finance & Accounting*, forthcoming.

Google Scholar

Xia, J. (2011). Risk Aversion and Portfolio Selection in a Continuous-Time Model.

SIAM Journal on Control & Optimization, 49(5), 1916–1937.

Article Google Scholar

Yang, G., & Liu, X. (2018). Goal-Based Portfolio Choice Model with Discounted Preference. *Journal of Computational and Applied Mathematics, 238,* 365–380.

Article Google Scholar

Yeo, K., & Melny, I. (2019). Deep Learning Algorithm for Data-Driven Simulation of Noisy Dynamical System. *Journal of Computational Physics, 376,* 1212–1231.

Article Google Scholar

Yin, G., Jin, H., & Jin, Z. (2009). Numerical Methods for Portfolio Selection with Bounded Constraints. *Journal of Computational and Applied Mathematics, 233*(2), 564–581.

Article Google Scholar

Yue, W., & Wang, Y. (2017). A New Fuzzy Multi-Objective Higher Order Moment Portfolio Selection Model for Diversified Portfolios. *Physica A: Statistical Mechanics and Its Applications, 465,* 124–140.

Article Google Scholar

Zhao, Y., Chen, K., Zhang, Y., & Davis, M. (2011). Takeover Protection and Managerial Myopia: Evidence from Real Earnings Management. *Journal of Accounting and Public Policy, 31*(1), 109–135.

Article Google Scholar

Zhao, P., & Qingxian, Q. (2016). Portfolio Selection Problem with Value-at-Risk Constraints Under Non-extensive Statistical Mechanics. *Journal of Computational and Applied Mathematics, 298,* 64–71.

Article Google Scholar

Zheng, Y., Osmer, E., & Zheng, L. (2017). The Relative Pricing of Cross-Listed Securities: The Case of Chinese A- and H-Share. *The Quarterly Review of Economics and Finance*, in press, corrected proof.

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