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REFLECTIONS ON EDITING THE JOURNAL OF FUTURES MARKETS AND FACTORS INFLUENCING DERIVATIVES MARKETS RESEARCH

ROBERT I. WEBB[1]

1. University of Virginia, Virginia, United States of America

* Corresponding Author: Robert I. Webb, McIntire School of Commerce, University of Virginia, Rouss & Robertson Halls, East Lawn, 125 Ruppel Drive, Charlottesville, Virginia 22903, United States of America. ✉ riw4j@virginia.edu

Introduction

The ***Journal of Futures Markets*** is the leading academic journal specializing in publishing scholarly research on derivative securities and markets. I had the privilege of serving as Editor of the Journal of Futures Markets for 24 years. That position provided me with a catbird seat with which to view the evolution of the financial-economic literature on derivative securities and markets. It also provided me with an opportunity to reflect on how changes in derivative securities and markets, have influenced research. These include the influence of technological advances; changes in market microstructure; financial crises; the growth of derivatives markets in emerging economies; the introduction of credit default swaps, VIX derivatives, cryptocurrency derivatives; and other new products; among others. Although my reflections on the impact of market events on derivatives research is the principal focus of this article, I want to preface that discussion with some comments on the editing process and the influence of my education, research, and experience on my role as an Editor.

1. Editors and the Nature of the Editing Process

Although Editors act as arbiters on what should be published and what should not be published in journals, they are essentially stewards for the finance profession. The focus and flow of research publications is determined by the topics researchers in finance are working on rather than by journal Editors alone. Indeed, published research on a given topic often sparks additional research on that topic which leads, in turn, to a natural temporal clustering of research on various topics.

The selection of which papers to publish and which not to publish is a process measured with error as the high-profile failure of various Editors at leading journals in finance and economics to publish the path-breaking Black-Scholes option pricing article illustrates. Editors are not omniscient. They rely on the assistance of others with specialized expertise in certain areas. Timely, constructive, and insightful peer reviews are integral to the publication process for academic journals. The growth of highly specialized research within increasingly narrow areas has increased both the importance of the review process and the weight accorded reviewers' comments in the editorial decision-making process. It has also increased the difficulty of finding qualified and impartial reviewers who are also subject matter experts, and who will return their comments in a timely fashion. Indeed, the scarcest resource of any academic journal is the time that qualified reviewers are willing to devote to commenting on papers. The success of the *Journal of Futures Markets* during my tenure as Editor was truly a group achievement. It reflects the many excellent contributions of numerous researchers, the constructive criticism of reviewers and Editorial Board members, as well as my Editorial decisions.

2. The Impact of My Education, Research, and Experience on My Role as Editor

None of us exist in a vacuum and the lens through which I evaluated research and the perspectives I brought to the position of Editor of the *Journal of Futures Markets* were shaped by my education, research, and professional experience. These factors need to be acknowledged. I am also obliged to pay homage to those who influenced me.

2.1 Education

I have been very fortunate. I studied at the University of Chicago in the mid-1970s during the height of the influence of the Efficient Capital Markets Hypothesis. Indeed, Chicago was the "home" of the efficient markets school of thought. Fischer Black, Merton Miller, Myron Scholes, and Eugene Fama were all Professors at the Graduate School of Business (GSB) when I entered as a doctoral student in finance in 1974. Arnold Zellner, who was also at the GSB, led the research charge on Bayesian statistics and econometrics—another important area of study that was changing how much empirical research was done. (Arnold also chaired my dissertation committee and had the most impact on how I think about research.) These were only two areas of the torrent of research activity occurring at the University of Chicago at the time.[1]

My education at Chicago instilled in me an appreciation of the power of economic incentives, the likelihood of rational decision-making by individuals, and the belief that free markets usually work very well. These ideas shaped my priors. However, the principal lesson at Chicago was the focus on empiricism (i.e., positive economics in the words of Milton Friedman) in explaining "what is" or the actual relationships observed in markets preferably using *sophisticatedly simple* models and appropriate data. Finance or Economics are not religions with immutable truths that are to be believed based on faith alone. Rather, concepts such as 'market efficiency" or "rational expectations" are hypotheses to be tested. Indeed, the fact that The University of Chicago is home to arguably both the leading proponent of market efficiency (Eugene Fama) and the leading proponent of behavioral finance (Richard Thaler) is testament to that philosophy in action.

It was an auspicious and exciting time to study at Chicago both for the academic advances occurring at The University of Chicago and the financial innovations introduced by, and traded on, the derivatives exchanges in Chicago. I entered Chicago only a year after the Black-Scholes option pricing article was published in the *Journal of Political Economy* in 1973 and slightly more than a year after exchange traded equity call options started to trade on the Chicago Board Options Exchange on 26 April 1973, and over two years after foreign currency futures –the first successful financial futures--started to trade on the International Monetary Market (IMM) division of the Chicago Mercantile Exchange.[2]

[1] This torrent of intellectual activity included: a focus on rational expectations (Robert Lucas); applications of economics to explain various kinds of human behaviour (Gary Becker); and the monetary approach to the balance of payments (Harry Johnson) among others in the Department of Economics. While I did not work with any of these three Economics professors, I was influenced by the ideas they developed and their impact on the economics literature. A debt of gratitude is also owed to George Stigler in the GSB, and Milton Friedman in the Department of Economics who were both at Chicago when I entered and helped create the strong research environment that existed at Chicago at the time.

[2] Black, F., and M. Scholes, "The Pricing of Options and Corporate Liabilities," The *Journal of Political Economy* May-June 1973, Vol. 81, Issue 3, pages 637-654. There is also a direct link between The University of Chicago and financial market innovations as Milton Friedman played an important role in assisting the Chicago Mercantile Exchange in securing regulatory approval of its International Monetary Market foreign currency futures contracts.

2.2 Research

My dissertation would be classified as "macrofinance" today as it examined the impact of Federal Reserve security transactions (i.e., *open market operations*) on Treasury bill yields. It was also a "high frequency" study as daily data (considered high frequency data at the time) were examined. My early derivatives market research post-graduation, focused on market microstructure issues, namely, the use of batch auctions on the Tokyo Grain Exchange and an examination of the behaviour of provisional prices in the determinization of batch auction transaction prices. I also conducted research on the impact of taxation on economic incentives. My research topics have changed as time has passed. However, my research tends to be empirical in nature, frequently exploits natural experiments, and oftentimes focuses on policy issues.

2.3 Experience in Business, Government, and Academia

Although my training at the University of Chicago and experience conducting research on my own prepared me well to be an Editor of an academic finance journal, my experience in business, government, and supranational organizations prior to becoming Editor also proved invaluable in evaluating research. That experience includes: trading fixed income securities for the Investment Department of the World Bank; trading financial futures and options as a member in the open outcry pits on the floor of the Chicago Mercantile Exchange; designing new financial futures and option contracts for the Chicago Mercantile Exchange; analysing the effects of deregulating the financial services industry, among others, at the Executive Office of the President, Office of Management and Budget; examining issues related to international futures markets at the U.S. Commodity Futures Trading Commission. This experience helped give me a better understanding of real-world financial markets, the critical role of derivative markets within financial markets, the needs of users of derivative contracts, and the proper role of regulation. I believe that my background also made me a better Editor especially on issues involving trading; market microstructure; contract design; regulation. It also gave me an appreciation for the importance of institutional details and a better understanding of financial history.

3. The Impact of Market Events on Derivatives Research

I have also been very fortunate that my tenure as Editor occurred during a period of very rapid growth in the exchange traded derivatives market, sharp changes in market microstructure with a shift from pit trading to electronic trading, the growth in algorithmic and high frequency trading, and periodic turmoil and crises in financial markets. Indeed, I think that it is important to understand some of the changes that were impacting financial markets or the overall economy to understand some of the research thrusts that occurred during my tenure as Editor of the *Journal of Futures Markets*.

What follows is a necessarily abbreviated and incomplete list of factors and events that impacted financial markets. It is not in strict chronological order as some of the events overlap. I have also included some representative articles on many of the topics.

3.1 The Rise of Electronic Trading and Exchange Consolidation

Although the demise of pit trading and the transition to electronic trading seems inevitable in retrospect it was not the case at the time. The futures markets in Chicago, New York, London, Paris, Singapore, Hong Kong, and Sydney were dominated by open outcry or pit trading. The move to electronic trading was not led by the derivative exchanges in Chicago or New York. Rather, it occurred overseas first. The Tokyo Grain Exchange (later acquired by TOCOM and now part of the Japan Exchange Group or JPX) was trading entirely electronically in the late 1980s albeit via periodic

batch auctions.[3] The Deutsche Termin Boerse or DTB (a predecessor of Eurex) was all electronic when it opened for trading in January 1990. Nevertheless, the pit-traded London International Financial Futures Exchange (LIFFE) dominated trading in German interest rate futures and continued to do so for several years. Order flow usually goes to the market where liquidity is, or is perceived to be, greatest. Nor was the introduction of the electronic trading venue Globex by the CME in 1992 immediately embraced by market participants. To be sure, it was not intended to compete with open outcry markets during the regular trading day. (Globex was intended to facilitate night trading for a number of exchanges around the world while leaving pit trading for the regular business day.) Initially, the largest fraction of trading volume on the Globex was from "curb" or after-hours trading on the Marché à Terme International de France (MATIF) in Paris.

The threat to pit trading suddenly became real in 1997 when there was a concerted effort by the DTB to attract order flow from German financial institutions for German interest rate futures contracts that had been going to LIFFE. The subsequent loss of significant order flow proved devastating to the pit-traded London International Financial Futures Exchange (LIFFE) as it quickly lost trading volume in its German interest rate futures to the electronically traded Deutsche Termin Boerse (DTB). The speed with which trading in German interest rate futures contracts on the LIFFE declined also illustrates how a large fraction of trading volume in open outcry auction markets comes from floor traders "scalping" or making a market. Much of this activity dries up in the absence of public order flow (because floor traders are simply "picking each other's pockets" as futures trading is a zero-sum game ignoring transaction costs) This, in turn, discourages pit traders from making a market –thus reducing trading volume further which reduces liquidity and discourages outside order flow. Liquidity in German interest rate futures shifted from London to Frankfurt. The imminent demise of pit trading became more apparent in April 1998 when the MATIF introduced electronic trading alongside of pit trading. Pit trading "died" within a month. The sudden collapse of pit trading on the MATIF when side-by-side electronic and pit trading was introduced seemingly sounded an imminent death knell for pit trading everywhere. The termination of pit trading on the Sydney Futures Exchange (now part of the ASX) happened in December 1999. Pit trading ended on LIFFE in November 2000. Not surprisingly, the transition from pit trading to electronic trading sparked much research as did evening trading.[4]

Meanwhile, pit trading continued to dominate the derivatives markets in Chicago. However, a threat to continued pit trading on the key interest rate futures markets in Chicago appeared on the horizon. Eurex which was formed from the merger of DTB and the Swiss Options and Financial Futures Exchange in mid-1998 promised to introduce a US subsidiary and take on the key Chicago exchanges by offering electronically traded futures contracts on U.S. Treasury securities and other markets. There was a period where it appeared to many observers that the pit-traded exchanges in Chicago would be wiped away by their fully electronically traded rival Eurex US which listed similar futures contracts. That did not happen. Part of the explanation was the slow approval process. Eurex US did not start to trade until 8 February 2004. Although depicted in the financial press at the time as a fight between pit-trading and electronic trading, a significant part of the total trading volume on the Chicago futures exchanges was already electronically traded when the battle with Eurex US began. The late start of Eurex US coupled with some temporary fee cuts and the existing deep liquid markets for the various futures contracts (which attracted outside order flow), meant that the exchanges in Chicago ultimately prevailed. Eurex US (later the US Futures Exchange) closed in 2008.

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[3] The International Futures Exchange (INTEX) based in Bermuda opened on October 25, 1984 as a venue that offered electronic trading of several financial futures contracts similar to those traded on U.S. futures markets.

[4] Examples include: Tse, Y. and Zabotina, T.V. (2001), Transaction Costs and Market Quality: Open Outcry Versus Electronic Trading. *Journal of Futures Markets*., 21: 713-735 . https://doi.org/10.1002/fut.1802
Ates, A. and Wang, G.H.K. (2005), Information transmission in electronic versus open-outcry trading systems: An analysis of U.S. equity index futures markets. *Journal of Futures Markets*., 25: 679-715. https://doi.org/10.1002/fut.20160
Frino, A., Harris, F.H.d., McInish, T.H. and Tomas III, M.J. (2004), Price Discovery in the Pits: The Role of Market Makers on the CBOT and the Sydney Futures Exchange. *Journal of Futures Markets*., 24: 785-804. https://doi.org/10.1002/fut.20105

The rationale for physical trading floors largely disappeared with the dominance of electronic trading as did the need for numerous exchanges. This prompted exchanges to demutualize and become publicly traded firms (which lessened the power of the former trader members). The Chicago Mercantile Exchange went public in 2002. The Chicago Board of Trade went public in 2005. The dominance of electronic trading in both stock and futures markets as well as demutualized and listed exchanges sparked a wave of mergers and attempted mergers among exchanges worldwide. Although the consolidation among derivatives exchanges received less attention than the consolidation of equity markets, the high market capitalizations attached to derivatives exchanges reflected their greater growth potential and pricing power. Moreover, the important role that clearinghouses played in the valuation of derivatives exchanges was largely overlooked in the academic literature.

3.2 High Frequency Trading, Algorithmic Trading, and Co-location

Having information before other market participants or being able to process or trade on publicly available information faster than other market participants is a tremendous advantage. The race for a speed advantage is as old as financial markets. The dominance of electronic trading fundamentally changed the race for speed in financial markets as participants tried to gain a temporal advantage over other market participants.[5] Algorithmic trading as well as technological advances in communications and information processing made it possible to trade at ever-lower latencies. It also created a demand for co-location services from high frequency trading (HFT) firms desiring to be as close as possible to exchange servers to minimize latency.[6] The rise of algorithmic and high frequency trading stimulated much research. Most of the literature has found that HFT has increased liquidity without increasing volatility.[7] Much HFT consists of market making. This latter point is not surprising as the founders of many prominent HFT firms are former floor traders who made markets on exchange trading floors. Recall that in the heyday of open outcry or pit trading it was commonly believed that 30% to 40% of total trading volume came from "locals" making a market on the trading floor. This is part of the reason why trading volume in German interest rate futures on LIFFE fell so much so quickly when public order flow started to fall in late 1997. Studies of the profitability of HFT firms in the e-mini S&P 500 stock index futures market showed huge pre-tax Sharpe ratios and that most of profits were earned by a few HFT firms. The immense profits of a handful of HFT firms given the limited risks taken helped stimulate research on whether the investment in technology required to be a successful HFT trader is socially beneficial from a societal perspective.

3.3 Flash Crashes and Rallies

The Flash Crash (and sudden rebound) of U.S. stock prices on 6 May 2010 captured the attention of market participants, regulators, academics, and the general public alike. A subsequent joint study of the Flash crash by the U.S. Securities and Exchange Commission and the U.S. Commodity Futures Trading Commission argued that an algorithmic order to sell 75,000 e-mini stock index futures contracts on a volatile day where the equity market was already down 4% likely precipitated a liquidity crisis in

[5] An example of the literature in this regard is: Zhang, SS. Need for speed: Hard information processing in a high-frequency world. *Journal of Futures Markets*. 2018; 38: 3– 21. https://doi.org/10.1002/fut.21861

[6] See for example: Frino, A., Mollica, V. and Webb, R.I. (2014), The Impact of Co-Location of Securities Exchanges' and Traders' Computer Servers on Market Liquidity. *Journal of Futures Markets*, 34: 20-33. https://doi.org/10.1002/fut.21631

[7] See for example: Bollen, N.P. and Whaley, R.E. (2015), Futures Market Volatility: What Has Changed?. *Journal of Futures Markets,* 35: 426-454. https://doi.org/10.1002/fut.21666
An exception is: Lee, E.J. (2015), High Frequency Trading in the Korean Index Futures Market. *Journal of Futures Markets*, 35: 31-51. https://doi.org/10.1002/fut.21640

the stock index futures market and later in the cash stock market.[8] A high frequency trader from the United Kingdom was later charged with "contributing to the Flash Crash" on 6 May 2010 by engaging in price manipulation and "spoofing."[9] A flash crash in yields or flash rally in Treasury securities on 15 October 2014 precipitated an investigation by the U.S. Treasury Department.[10] However, no cause was discovered.

The 6 May 2010 flash crash in equities received widespread attention and stimulated substantial research on high frequency trading. The flash rally in Treasury prices on 15 October 2014 has received less attention in the academic literature despite the central role that the U.S. Treasury market plays in U.S. dollar denominated fixed income markets. Flash crashes in commodity markets have also occurred but not received the attention they deserve in the financial economic literature nor has spoofing. Observations of flash crashes have stimulated research on their causes and how to manage "flow toxicity."[11] The success of market making by HFT firms makes market making by humans riskier. Although HFT dominates market making and makes markets more liquid during most times, it seemingly also increases the odds of flash crashes. The various flash crashes highlight the fragility of financial markets and illustrate how liquidity can suddenly vanish.[12]

3.4 New Securities and New Markets

The establishment of the Chicago Board of Trade in 1848 and the subsequent introduction of standardized futures contracts in 1865 is usually considered the beginning of exchange traded futures markets. However, exchange traded futures owe their origin to the Dojima Rice Exchange which was established in Osaka, Japan in the late 1600s and became legal by 1730. Although commodity futures markets were established in a number of cities around the world after the creation of the Chicago Board of Trade, Chicago continued to play an outsized role. The creation of financial futures on the International Monetary Market division of the Chicago Mercantile Exchange in 1972 changed futures markets as financial futures markets were later established around the world to emulate its success. What changed during my tenure as Editor of the *Journal of Futures Markets* was the strong growth in trading volume outside North America in both commodity and financial futures and options.

Measured in terms of the number of derivative contracts traded, there was a sharp shift towards Asia. Indeed, he Korea Exchange (KRX) held the title as the largest derivatives exchange in the world for almost 8 years due to the popularity of the KOSPI 200 option contracts among retail investors. (Nor was the title due to small notional size option contracts.) There has been tremendous growth in both South America and Russia. The National Stock Exchange (NSE) of India was the largest derivatives exchange in the world in terms of number of contracts traded in 2021 followed by the B3 exchange in Brazil. The NSE traded 17.26 billion contracts in 2021 followed by 8.76 billion contracts on the B3 and the CME

[8] U.S. Securities and Exchange Commission; Commodity Futures Trading Commission "Findings Regarding the Market Events of May 6, 2010," September 30, 2010, https://www.sec.gov/files/marketevents-report.pdf

[9] https://www.justice.gov/criminal-vns/file/1175901/download The trader pled guilty to one count of wire fraud and one count of spoofing in a plea agreement. https://www.justice.gov/criminal-vns/file/1175911/download

[10] U.S. Department of the Treasury, Joint Staff Report: "The U.S. Treasury Market on October 15, 2014," July 13, 2015. https://www.treasury.gov/press-center/press-releases/Documents/Joint_Staff_Report_Treasury_10-15-2015.pdf

[11] Kang, J, Kwon, KY, Kim, W. Flow toxicity of high-frequency trading and its impact on price volatility: Evidence from the KOSPI 200 futures market. *Journal of Futures Markets,* 2020; 40: 164– 191. https://doi.org/10.1002/fut.22062

[12] The notion that electronic trading might provide tighter bid-ask spreads during normal tranquil periods but deteriorate "during periods of information arrival" (i.e., turbulent periods) was noted by Aitken et al [2004]. Aitken, M.J., Frino, A., Hill, A.M. and Jarnecic, E. (2004), The impact of electronic trading on bid-ask spreads: Evidence from futures markets in Hong Kong, London, and Sydney. *Journal of Futures Markets*, 24: 675-696. https://doi.org/10.1002/fut.20106

Group in the USA with 4.94 billion derivative contracts according to the Futures Industry Association.[13] The rise of Mainland Chinese futures markets has been phenomenal with the Shanghai Futures Exchange (SFE), Dalian Commodity Exchange, (DCE) and Zhengzhou Commodity Exchange (ZCE) dominating trading in various commodities and trading a number of commodities that are not traded elsewhere. Not surprisingly, there has been a substantial amount of academic research on Mainland Chinese commodity futures markets. However, there are still unexploited opportunities to examine some of the unique commodities traded on the DCE and ZCE especially. Moreover, some of the research from emerging markets sometimes reports substantially different results from those reported from studies examining similar questions using data from developed markets.[14]

The introduction of VIX and other volatility-based derivatives precipitated much research as did the introduction of credit default swaps.[15] Another new product that attracted significant attention was the introduction of derivatives on bitcoin and other cryptocurrencies. One difference between the cryptocurrency derivatives and other new products is the volume traded on lightly regulated or unregulated exchanges. Indeed, if the reported trading volumes are correct, the trading volume of cryptocurrency derivatives on lightly or unregulated exchanges exceeds that on conventionally regulated derivative exchanges.[16]

4. Interventions

Direct or indirect interventions in financial markets by governments or central banks during this time period have also impacted academic research on derivative markets. Several examples come immediately to mind. The 1998 attack on the Hong Kong dollar by hedge funds (after a failed attempt in 1997 in the wake of the start of the Asian Financial Crisis) prompted the Hong Kong Monetary Authority (HKMA) to buy stocks in the cash market and Hang Seng stock index futures. The HKMA did so to punish the hedge funds who had gone short 80,000 Hang Seng stock index futures contracts from which they hoped to make substantial gains as they also sold Hong Kong dollars to force interest rates up. The intervention distorted the basis between cash and futures.[17] Another example of an intervention was the decision of the Taiwanese authorities to reduce the tax on futures transactions by half on 1 May 2000. This led to a substantial increase in trading volume and narrower bid-ask spreads with no apparent impact on volatility.[18] One lesson from the Global Financial Crisis of 2007-2009 is that exchange traded derivatives markets worked well. However, the bankruptcy of Lehman Brothers

[13] https://www.fia.org/resources/global-futures-and-options-trading-hits-another-record-2021

[14] See for example the following two studies: Guo, Han, and Ryu of the Korean market. Guo, B., Han, Q. and Ryu, D. (2013), Is the KOSPI 200 Options Market Efficient? Parametric and Nonparametric Tests of the Martingale Restriction. *Journal of Futures Markets*, 33: 629-652.
Yang, J., Yang, Z. and Zhou, Y. (2012), Intraday price discovery and volatility transmission in stock index and stock index futures markets: Evidence from China. *Journal of Futures Markets*, 32: 99-121. https://doi.org/10.1002/fut.20514

[15] Zhang, J.E. and Zhu, Y. (2006), VIX futures. J. Fut. Mark., 26: 521-531. https://doi.org/10.1002/fut.20209
Frijns, B., Tourani-Rad, A. and Webb, R.I. (2016), On the Intraday Relation Between the VIX and its Futures. Journal of Futures Markets, 36: 870-886. https://doi.org/10.1002/fut.21762
Luo, X. and Zhang, J.E. (2012), The Term Structure of VIX. J. Fut. Mark., 32: 1092-1123. https://doi.org/10.1002/fut.21572

[16] See for example: Alexander, C, Choi, J, Park, H, Sohn, S. BitMEX bitcoin derivatives: Price discovery, informational efficiency, and hedging effectiveness. *Journal of Futures Markets*. 2020; 40: 23– 43. https://doi.org/10.1002/fut.22050

[17] Draper, P., and J.K.W. Fung, "Discretionary Government Intervention and the Mispricing of Index Futures," *Journal of Futures Markets*, Vol. 23, December 2003, pp. 1159-1189.
Yam, J., "Coping with Financial Turmoil," Inside Asia Lecture 1998, 23 November 1998, Sydney, Australia
https://www.hkma.gov.hk/eng/news-and-media/speeches/1998/11/speech_231198b/

[18] Chou, R.K., and G.H.K. Wang, "Transaction Tax and Market Quality of the Taiwan Stock Index Futures," *Journal of Futures Markets*, Vol. 26, December 2006, pp. 1195-1216.

highlighted some potential problems in the over the counter (OTC) derivatives market for credit default swaps. This led to a demand by G-20 leaders at the 2009 Pittsburgh Summit to require trade repositories and central clearing mechanisms for OTC credit default swap transactions[19].

As the above examples demonstrate, there are many types of interventions. Sometimes the intervention is a required change in the notional size of the derivatives contract to achieve some regulatory objective. Such was the case in the decision by the Korean authorities to increase the notional size of the KOSPI 200 options contract almost five-fold on 9 March 2012 to discourage speculative trading by individuals. This action (which was later partially reversed) cost the Korea Exchange its position as the largest derivatives exchange in the world in terms of trading volume—a title it had held for several years as noted above. Yet another example of government intervention in derivatives markets was the decision by the Chinese authorities to limit trading in CSI 300 and CSI 500 stock index futures in the wake of the sharp decline in Chinese equity prices in 2015. The decision resulted in Chinese stock index futures trading volume falling by 99%.[20] These decisions illustrate the power of regulatory actions on derivative markets. Not surprisingly, each of these incidents sparked academic research on the impact of the actions.

5. Behavioral Finance, New Techniques, and New Data

The growth of interest in behavioral finance has also impacted research on derivative securities and markets.[21] Interest in issues such as investor attention and investor sentiment have also sparked research on the behavior of derivative securities and markets. Other developments in finance as well as new econometric techniques have also sparked the examination of new issues or the re-examination of old issues in the literature.

This changed as access to tick data (which reflects only price changes), trade, and quote data became more readily available to researchers. One consequence of electronic trading venues is the greater availability of high frequency data. This has allowed studies of phenomena such as latency arbitrage. Having access to a unique data set is sometimes key to getting the research published. For instance, trader identification data are often difficult to obtain. Trader identification data can provide greater insights into trader decision-making, reveal the profitability of various trading strategies, as well as whether the trader falls prey to various cognition illusions noted in the behavioral finance literature, among other things.[22]

[19] https://www.treasury.gov/resource-center/international/g7g20/Documents/pittsburgh_summit_leaders_statement_250909.pdf

[20] Han, Q., and J. Liang, "Index Futures Trading Restrictions and Spot Market Quality: Evidence from the Recent Chinese Stock Market Crash," *Journal of Futures Markets,* Vol. 37, April 2017, pp. 411-428.

[21] See for instance: Liu, Y.-J., Wang, M.-C. and Zhao, L. (2010), "Narrow framing: Professions, sophistication, and experience." *Journal of Futures Markets,* 30: 203-229. https://doi.org/10.1002/fut.20407

[22] Three examples that use account level data from the Taiwan Futures Exchange are:
Chou, R.K. and Wang, Y.-Y. (2009), Strategic order splitting, order choice, and aggressiveness: Evidence from the Taiwan futures exchange. J. Fut. Mark., 29: 1102-1129. https://doi.org/10.1002/fut.20416
Chou, R.K., Wang, G.H.K. and Wang, Y.-Y. (2015), The Effects of Margin Changes on the Composition of Traders and Market Liquidity: Evidence from the Taiwan Futures Exchange. *Journal of Futures Markets,* 35: 894-915. https://doi.org/10.1002/fut.21718
Chang, MC, Tsai, C-L, Wu, RC-F, Zhu, N. Market uncertainty and market orders in futures markets. *Journal of Futures Markets*. 2018; 38: 865– 880. https://doi.org/10.1002/fut.21918

6. Conclusions

Most readers have always lived in a world where exchange traded financial futures have existed. Most readers have always lived in a world where exchange traded equity options existed. Most readers have always lived in a world where interest rate swaps existed. Most readers have always lived in a world where exchange traded derivatives on energy, in general, and crude oil, in particular, existed and were important markets. Many readers have lived in a world where credit default swaps have always existed. I have not. 2022 marks the 50th year since the successful introduction of financial futures on the International Monetary Market. 2023 will mark the 50th anniversary of exchange traded equity options and the publication of the seminal paper by Fischer Black and Myron Scholes on option pricing. Interest rate swaps were introduced in 1981. Crude oil futures were introduced on the New York Mercantile Exchange in 1983. Credit default swaps were introduced in the early 1990s. And more changes are likely in financial markets given the success of cryptocurrencies and cryptocurrency derivatives,

I have had the opportunity to live through these changes and see how the innovations and changes have impacted both financial markets and financial market research. For the past 41 years, the *Journal of Futures Markets* has chronicled many the changes in derivative securities and markets. I expect it to continue to do so. It was my pleasure to serve as Editor of the *Journal of Futures Markets* for 24 years.