
Introduction: stock market globalization, past and present

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THE CURRENT STATE OF STOCK MARKET GLOBALIZATION

The first decade of the twenty-first century has witnessed historic changes in the stock market. From the nineteenth century until near the end of the twentieth century, stock exchanges were organized nationally and featured mutual ownership by exchange members.¹ In conjunction with a technological revolution in trading systems and communications, stock exchanges have also demutualized, that is, converted from mutual to corporate organization with publicly traded common stock. Following demutualization, various exchanges have engaged in an ongoing series of international mergers and acquisitions involving other exchanges, electronic communications networks (ECNs) and multilateral trading platforms (MTFs), derivatives exchanges, alternative trading systems and clearing organizations. In addition, the stock trading business has become increasingly competitive and a range of new products, such as exchange traded funds, have been introduced. New electronic trading platforms have emerged that are making the exchange trading floor obsolete for all but a small number of large block trades.

The changes that have taken place in the organizational structure of stock exchanges are illustrated in the 2009 10-K audited financial statements for the largest global exchange group, NYSE Euronext:

NYSE Euronext is a leading global operator of financial markets and provider of innovative trading strategies. We offer a broad and growing array of products and services in cash equities, futures, options, swaps, exchange-traded products, bonds, market data and commercial technology solutions, all designed to meet the evolving needs of issuers, investors, financial institutions and market participants. We are also the world's leading, most liquid equities exchange group. With more listed issues than any other exchange group, trading on NYSE Euronext's equity markets represents approximately one-third of the world's cash equities volume. As of December 31, 2009, 64 of the 2009 Fortune Global 100 companies were listed on NYSE Euronext.

At the end of 2010, NYSE Euronext (NYX) was a holding company composed of a US component: the original New York Stock Exchange (NYSE); NYSE Arca, formed by a merger between the NYSE and Archipelago Holdings, Inc. in March 2006 that coincided with the demutualization of the NYSE; and NYSE Amex, formed by the acquisition of the American stock exchange in June 2008. The European component of NYSE Euronext comprises five European-based exchanges: the Paris, Amsterdam, Brussels and Lisbon stock exchanges, and NYSE LIFFE which has derivatives markets in London, Paris, Amsterdam, Brussels and Lisbon. There is also a relatively small US futures market component, NYSE LIFFE US. NYSE Euronext was formed in a merger

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on 4 April 2007 of NYSE Group and Euronext. NYSE Euronext common stock is dually listed on the NYSE and Euronext Paris under the symbol 'NYX'.

Similarly from the 2009 10-K for the next largest global exchange, NASDAQ OMX (NDAQ), which identifies:

a leading global exchange group that delivers trading, exchange technology, securities listing, and public company services across six continents. Our global offerings are diverse and include trading across multiple asset classes, market data products, financial indexes, capital formation solutions, financial services and market technology products and services. Our technology powers markets across the globe, supporting cash equity trading, derivatives trading, clearing and settlement and many other functions.

The development of NDAQ is similar to that of NYX, with the proviso that the original NASDAQ (National Association of Security Dealers Automated Quotations) stock market started with a different organizational structure. From its original formation in 1971 until 2000, NASDAQ operated as a subsidiary of FINRA (formerly the National Association of Security Dealers). A restructuring of FINRA's NASDAQ ownership in 2000 started a process that resulted in the demutualization of NASDAQ from FINRA in 2006 and the conversion of NASDAQ to national securities exchange status in 2007. In February 2008, NASDAQ OMX was created by the merger of NASDAQ and OMX AB, a Swedish-Finnish exchange group that, like Euronext, was the result of the stock market globalization process in Europe. In comparison to Euronext, OMX AB is a more modest exchange operation.

The beginnings of the stock market globalization process in Europe can be traced to the formation of the European Union in 1993 and subsequent initiatives to harmonize financial markets within the Union. This process facilitated the creation of Euronext in September 2000 that involved the merger of the stock exchanges in Amsterdam and Brussels with the Paris Bourse. Of these, the Amsterdam stock exchange can claim an historical pedigree as the first stock exchange trading venue starting in the early seventeenth century. The Paris bourse has origins in the early eighteenth century. In December 2001, Euronext acquired ownership of the London International Financial Futures Exchange (LIFFE), though the exchange governance remained with Liffe. In 2002, Euronext merged with the Lisbon Stock Exchange. The natural progression toward a pan-European stock exchange generated discussions between Euronext and the largest German stock exchange, Deutsche Bourse, starting in 2005. A bidding competition emerged with the entry of the NYSE, resulting in an agreement in 2006 producing the merger of the NYSE and Euronext in April 2007. Further merger negotiations between NYSE Euronext and Deutsche Bourse ended unsuccessfully in late 2008.

In contrast to the size and historical roots of Euronext, OMX AB is more modest. OMX AB was founded during the 1980s as an exchange to trade option contracts in Sweden. In 1998, OM rose to significance with acquisition of the Stockholm Stock Exchange. Following this came an unsuccessful attempt in 2001 to buy the London Stock Exchange and another unsuccessful attempt to establish a fully electronic European stock exchange (Jiway) with some American investment banks that ended in October 2002. In September 2003 a significant step was taken when the Helsinki Stock Exchange merged with OM. With this merger, OMX also acquired interests in the Baltic stock exchanges in Latvia, Estonia and Lithuania. The combined exchanges assumed the name OMX

in August 2004. In Jan 2005, OMX acquired the Copenhagen Stock Exchange and in September 2006, the Iceland Stock Exchange agreed to be acquired. Other OMX initiatives include: purchase of a 10 per cent stake in the Oslo Stock Exchange, October 2006; and, acquisition of the Armenian Stock Exchange in November 2007. With this foundation, the electronic Nordic Stock Exchange was launched in October 2006, trading securities from the three Nordic exchanges. This merger and acquisition activity by OMX set the stage for the merger with NASDAQ in February 2008.

A failed bid by NASDAQ to acquire the London Stock Exchange (LSE) provides a backdrop to the NASDAQ merger with OMX. Starting with a Deutsche Bourse bid in 2001, a number of unsuccessful efforts were made to acquire the LSE. The NASDAQ bid to acquire the LSE was advanced in early 2006 and rejected by the LSE shareholders in April 2006. NASDAQ responded by withdrawing the bid and proceeding to purchase shares in the LSE. After accumulating about 30 per cent of LSE shares, NASDAQ made another bid to acquire the LSE in December 2006 that, again, failed to gain shareholder approval. This bid was withdrawn in February 2007. Faced with serious competitive challenges posed by the NYSE Euronext merger in April 2007, NASDAQ agreed to buy OMX in May 2007. This precipitated a higher bid in August 2007 for OMX from Borse Dubai that, ultimately, led to Borse Dubai acquiring a 20 per cent stake and 5 per cent of voting shares in NASDAQ as well as all the NASDAQ stake in the LSE. The complicated deal was completed in February 2008.

Since the creation of NASDAQ OMX the expansion process has continued. In July 2008, there was the acquisition of the Philadelphia Stock Exchange which has a significant presence in the derivatives market, primarily in options. This move complemented the NASDAQ Options market that was launched in March 2008. The move into derivatives trading has continued with a number of further acquisitions. A stake in Nord Pool ASA was acquired in October 2008, adding clearing and international derivatives activities. Nord Pool was fully acquired in May 2010. The initial Nord Pool move was followed quickly by the acquisition of a controlling interest in the International Derivatives Clearing Group in December 2008, and in January 2009 a stake in the European Multilateral Clearing Facility was acquired. In December 2009, a controlling stake in a commodities trading ECN, Agora-X, was added. With this build-up, by 2010 NASDAQ OMX Commodities featured the world's largest power derivatives exchange and a European carbon exchange. Expansion in stock trading continued with the acquisition of the Boston Stock Exchange in August 2008 that was relaunched as NASDAQ OMX BX in January 2009.

Despite the considerable progress toward stock market globalization, much stock trading is still organized along national lines. As discussed, the two largest and most global stock exchange groups, NYX and NDAQ, have activities concentrated primarily in Europe and the US. Integration with stock markets in East Asia, South Asia, Latin America, South Africa and other geographical regions is limited. Capital market liberalization initiatives have all exchanges actively competing with each other for listings, cross-listings and trading volume at a time when market share in trading for listed securities by traditional exchange platforms is falling considerably. In particular, the market share of NASDAQ trading in NASDAQ listed stocks fell from 46.1 per cent in 2007 to 33 per cent in 2009, and the share of NASDAQ in all trading of US listed stocks fell from 29.1 per cent in 2007 to 23 per cent in 2009. There is even erosion of market share

Table I.1 Rankings of stock exchanges by total capitalization

Exchange	US\$ millions
NYSE Euronext (US)	12423 557
Tokyo Stock Exchange	3 534 685
NASDAQ OMX	3 500 875
NYSE Euronext (Europe)	2 793 199
London Stock Exchange	2 773 395
Shanghai Stock Exchange	2 630 841
Hong Kong Exchanges	2 325 349
TSX Group	1 817 263
Bombay Stock Exchange	1 373 016
National Stock Exchange India	1 338 495

Source: World Federation of Exchanges (31 March 2010).

in Europe where the share of the Nordic and Baltic exchanges fell from 100 per cent in 2007 to 88 per cent in 2009. NYX is experiencing similar results with the trading share of NYSE listed securities falling from 45.6 per cent in 2008 to 38.4 per cent in 2009. Though precise numbers are not reported, the market fragmentation generated by the Markets in Financial Instruments Directive (MiFID) in Europe has produced similar shrinking of trading share of Euronext in Euronext listed securities.

NYX and NDAQ have pursued mergers and acquisitions to deal with the competitive pressures of the stock market globalization process. In contrast, numerous important Stock Exchanges around the globe, such as the Tokyo Stock Exchange (TSE), Toronto Stock Exchange (TSX),² London Stock Exchange (LSE), and Hong Kong Stock Exchange (HKX), are not currently part of a global exchange group but have still had to deal with globalization forces (see Table I.1). Such major exchanges have reacted to the global growth of NYX and NDAQ by engaging in alternative approaches to deal with globalization, such as joint ventures with other exchanges. Regulatory change generated by technological advances in trading and communications technology, such as Regulation NMS (National Market System) in the US and MiFID in the EU, has been accompanied by similar legislation in other major countries. While all major stock exchanges have demutualized, there are other forces impeding the march to globalization. In addition, the related process of dominant national exchanges absorbing smaller regional exchanges has progressed at different rates in different countries.

The response of the Hong Kong Exchange (HKX) to the ongoing globalization process reflects the substantive segmentation that still characterizes the global stock market. HKX is acutely aware of the competitive issues raised by technological advances, as reflected in the 'CEO Review' from the HKX Annual Report (2009, p. 13):

As we look ahead to the future, we see 2 major forces of opportunity and competition at play – opportunities resulting from the further opening of the Mainland market and more intense competition from exchanges and trading venues around the world and in the region . . . On the competition front, we believe that the advancement of financial technology is rapidly changing the competitive landscape. We must ensure that the capabilities and functionalities of our own trading platforms well equip us to compete with other global players. Further, we need to

provide a full suite of products that meets the growing expectations of our current and future customer base, as well as continue to enhance the cost and operational efficiency for parties trading with us.

Despite such statements, HKX is relatively insulated from global competitive forces due to inherent advantages in the Chinese stock market. As a consequence, HKX has pursued a strategy of expanding in the market for Chinese stocks and defending the competitive position that it has in that market. Expanding connections with the Shanghai and Shenzhen stock exchanges in 2009, offering of new products such as a range of ETFs and actively pursuing Mainland initial public offerings (IPOs) are understandable and predictable developments. Initiatives to globalize outside of China do not make much strategic sense at this point for HKX.

In contrast to HKX, the second-largest stock exchange in the world, the Tokyo Stock Exchange (TSE), does not have significant inherent advantages supporting expansion in mainland China. Cross-listings of major TSE listed stocks on alternate exchanges also pose a significant competitive challenge. The Tokyo Stock Exchange demutualized in November 2001 and the exchange has moved recently to expand ETF trading. However, Japan has also been relatively slow in implementing Regulation NMS and MiFID-type reforms and the TSE has not moved significantly into derivative security trading. Arguably still the financial centre for East Asia, the Tokyo Stock Exchange still retains a 95.8 per cent share of the trading value of listed stocks in Japan. While faced with limited internal competition within Japan, developments by NYX and the NDAQ present growing external pressure due to the progress of stock market globalization. In response, the TSE entered an agreement with the LSE in October 2007 to extend the Alternative Investment Market (AIM), a market for growing companies founded by the LSE in 1995, into Japan and East Asia. Progress on this initiative has been relatively slow. AIM received an exchange licence in May 2009 and in November 2010 announced a framework for bond trading.

With a stated vision to be the 'World's Capital Market', the LSE is near the epicentre of the globalization process. Various exchanges, including NASDAQ and Deutsche Bourse, have attempted to acquire the LSE only to be rebuffed by the shareholders, ostensibly because the bids were insufficient. Competitive pressures compelled the LSE to merge with Borsa Italiana (BI) in 2007. This merger included the BI ownership of MTS, an electronic bond trading platform. Further developments followed in 2009 with the LSE entering into strategic partnerships with the Toronto Stock Exchange (TSX) and the Oslo Bourse. This move was also a strategic first step for TSX that has been primarily focused on the exchange consolidation process within Canada that took form in 1999 with the creation of the Canadian Venture Exchange (CDNX) from the merger with the Vancouver and Alberta stock exchanges and movement of CDNX trading to Toronto. The Winnipeg stock exchange and the equities portion of the Montreal exchange joined CDNX soon after. Despite being ahead of the curve in the move to fully electronic trading in 1997 and demutualization in 2000 (completed in 2002), TSX has been somewhat insulated from competitive pressure by the strength and specialized character of the Canadian equity market. In 2006, TSX expanded bond market trading with the acquisition of Shorcan Brokers. In 2008, the completion of the merger with the derivatives-based Montreal exchange to form the TMX finalized the exchange

consolidation process in Canada. In September 2009, TSX announced that co-location services for high-frequency traders were available.

CONTENTS AND CONTRIBUTORS: THE *HANDBOOK OF RESEARCH ON STOCK MARKET GLOBALIZATION*

The stock market globalization process has produced historic changes in the structure of stock markets. Though this process has proceeded at different rates geographically, the effects are evident in stock markets throughout the globe. The process has been most pronounced in the US and Europe where competitive pressures have been greatest. Despite these historic changes, there are relatively few sources examining the historical connections between the globalization process currently under way and previous periods of stock market globalization. Part I of the *Handbook* details these connections with five historical contributions covering previous globalization periods. In particular, by the end of the nineteenth century a global network of national stock exchanges, centred in London, had evolved. In addition to trading on national exchanges, stocks and shares from around the world were traded in international 'capitals of capital'. Though this last period of globalization came to an end with the Great Depression, the 'capitals of capital' have survived to form key parts of the current globalization process.

The five chapters in Part I are contributed by the editor and four eminent scholars who have made outstanding contributions to the history of financial markets, stock markets and the corporate economy. To those familiar with this area of study, Youssef Cassis, Professor of Economic History at the European University Institute, Florence, Italy, needs no introduction. Chapter 1 summarizes the historical insights about 'capitals of capital' contained in the influential Cassis (2006) and related contributions including Cassis (1997, 1994) and Cassis et al. (1995). More precisely, the first chapter examines:

these 'capitals of capital', the world's leading international financial centres, from the late eighteenth century to the present. Given the transformation of the world economy, their number has remained remarkably stable, yet without being rigid. In Europe, barely half a dozen centres have really made a difference in the financial field: London and Paris; Berlin, followed by Frankfurt after the Second World War . . . At world level, New York should of course be added from the end of the nineteenth century and, much more recently, Tokyo, Hong Kong and Singapore.

This chapter uses a historical approach to identify factors that contribute to the rise and decline of particular financial centres within the global stock market.

Chapter 2 is contributed by another eminent scholar in the history of financial markets: Professor Randal Michie, University of Durham, UK. In addition to producing the definitive history of the London Stock Exchange (Michie 1999), Professor Michie has authored numerous insightful works on the history of financial markets in general, and the stock market in particular, for example Michie (2009, 2007, 2006, 1986, 1981). Chapter 2 takes an 'alternative perspective' to the history of stock market globalization which recognizes that 'the stock market serves a number of different masters'. Instead of focusing on the ability of the stock market to obtain corporate financing through the issue of transferable stocks, 'the needs of the investor must also be taken

into account'. The accumulation of savings needs an outlet, producing variation in the investment from small amounts for short periods to large amounts over long periods. The needs of investors also varied according to whether regular income was desired over long-term capital gains. The more complex and sophisticated the economy the greater the need there was for a financial system that 'continually responded to the ebb and flow of credit and capital both over time and space and between individuals, institutions and businesses'. Confidence of investors in the stock market as a forum to trade stocks is essential. Erosion of this confidence underpins market disruptions such as the global financial crisis of 2007–09.

Though not as global in reach, precursors of the nineteenth-century stock market globalization process emerged as early as the sixteenth century. The third chapter, contributed by the editor, discusses the history of stock trading from the sixteenth century until the emergence of globalized exchanges in the late twentieth century. The initial development of essential institutional elements of the early trade in stocks is traced to the Renaissance Antwerp exchange. Subsequent speculative trading on the Amsterdam and London stock markets in the seventeenth and eighteenth centuries is closely reviewed. The emergence of a global trade in stocks and shares in the nineteenth century is reflected in the evolution of the New York Stock Exchange, together with the centralization of global stock trading in London. Following a disruption of the globalization process during the Great Depression and the Second World War, the last half of the twentieth century has seen an unprecedented acceleration of equity security market globalization. The chapter concludes with an overview of factors contributing to this acceleration, including exchange demutualization and the revolution in communications and information technology.

The fourth chapter in Part I is not directly concerned with the history of the stock market. Rather, this chapter, contributed by financial historian Janette Rutterford, is concerned with the historical evolution in the methods used to value common stocks and how investors have changed the way in which they value shares over time. This chapter is based on a number of insightful works on this subject, for example Rutterford (2006, 2004), Rutterford and Gregory (1999) and Laurence et al. (2009). Professor Rutterford identifies four key methods used to value common stocks: book value; dividend and earnings yields; price–earnings ratios; and discounted cash flow. The chapter identifies 'an early dependence on book value, the assets to back the nominal value of the shares, and on dividend yields, with shares, being valued as bonds, with a higher yield to reflect their more uncertain income. As firms became more profitable, dividends no longer represented the underlying earnings of firms. This was particularly true in the US'. The chapter demonstrates that the appearance of earnings yields and price–earnings ratios came into common use in the US during the Wall Street boom of the 1920s, while the transition was much slower in the UK where these valuation methods did not take hold until the 1960s.

One important aspect of the current stock market globalization process is the proliferation and increased importance of new 'diversification' products, such as exchange traded funds. Building on Hutson (2005), the fifth and final chapter in Part I, by Elaine Hutson of Monash University, Melbourne, Australia examines a similar historical occurrence that appeared during the second half of the nineteenth century: the investment trusts that traded in the British stock market. These funds were precursors to the

professionally managed stock funds that rose to prominence in the US market following the First World War. This chapter traces the pedigree of the nineteenth century funds to the 1770s when a number of such schemes appeared in Paris, Amsterdam and Geneva. One such fund, the Eendragt Maakt Magt, originating in Holland in 1774, bore striking similarity to the British investment trusts that first appeared 1868. This chapter examines the history of these trusts from 1868 until the Barings crisis in the 1890s. Factors contributing to the growth in investment trusts are identified. While most funds were well managed, this chapter also details a number of investment trust scams that emerged during the speculative boom of the 1880s.

In contrast to the historical chapters of Part I, Chapters 6 to 9 in Part II of the *Handbook* are concerned with the current state of stock market globalization. Overwhelmingly, available studies on the current state of such globalization use an economic or financial perspective. While three of the four chapters in Part II also employ this approach, Chapter 6 by Alexandru Preda of the Department of Sociology, University of Edinburgh, UK continues the sociological approach to evaluating the stock market. This approach to analysing the stock exchange has an intellectual pedigree stretching back to Max Weber (1894 [2000]). Professor Preda has made numerous significant contributions to the recent revival of interest in financial markets by sociologists, for example Preda (2009, 2006, 2007) and Cetina and Preda (2004). The chapter focuses on 'social closure', or 'the processes through which institutional control mechanisms are set in place. These mechanisms contribute to providing stock exchanges with a distinct institutional identity, while integrating them within the social fabric.' While the technological revolution, shifts in the ownership structure and the emergence of alternative trading platforms would seem to have weakened the stock exchange as a social institution and, hence, to have made social closure superfluous, this chapter argues that the situation is much more complex.

One essential characteristic of the modern stock market globalization process is the change in the corporate governance and exchange ownership associated with demutualization. From the Antwerp bourse in the sixteenth century until 1773 when a group of brokers in London acquired a building in Sweetings Alley off Threadneedle Street that was called the 'Stock Exchange', venues for trading stock were owned separately from those involved in the actual trading of stock. From this point until the end of the twentieth century, most stock exchanges came to be owned by the members, that is, to have a mutual form of organization. Direct access to trading on the exchange was increasingly restricted to members only. The value of exchange membership was reflected in the price of 'seats' on the exchange (for example Davis et al. 2007). The demutualization of stock exchanges that began at the end of the twentieth century has, not surprisingly, generated a large number of studies on various aspects of this process that are usefully summarized and analysed in Chapter 7 by Giovanna Zanotti of the University of Bergamo, Italy. This chapter concludes from the various studies of the demutualization process that the emergence of the for-profit model for stock exchange governance was a consequence of the competitive pressures arising from the rapid change in trading and communications technology that characterized the last two decades.

In contrast to Chapter 7 which summarizes a large number of studies, Chapter 8, by Iftekhar Hasan, Heiko Schmiedel and Liang Song, empirically investigates the effects of stock exchange mergers and acquisitions (M&As) on the value of competitor shares. The

sample consists of 63 M&As of stock exchanges paired with the respective competitors in the same region during the 2000–2007 period. As reflected in Francis et al. (2010), Hasan et al. (2003) and Schmiedel et al. (2006), the authors of this chapter are well suited to the task of investigating the short-run performance (share-price responses) of these public stock exchanges. The results indicate that, in general, when a stock exchange is merged with another exchange, its competitor significantly loses shareholder value. In particular, when a stock exchange is involved in a horizontal (cross-region) transaction instead of a vertical (within-region) one, the competitor loses even more shareholder value than the average loss. Further, if the stock exchange is merged with another stock exchange in a country with a more developed stock market or with higher governance, the competitor's shareholder value will also fall more.

The final chapter in Part II concerns a central factor in the competitive forces driving stock market globalization, both past and present: the trading of stocks outside the resident country of the corporation. In the nineteenth century, this was facilitated by the widespread use of bearer securities. In modern markets, this trading requires cross-listing. Though demutualization significantly reduced the incentives to cross-list, as reflected in the stagnant to decreasing share of foreign shares being traded on the major markets, there still remains an active literature on the subject. In Chapter 9, Manuela Geranio of Università Bocconi in Milan, Italy provides an insightful summary of this literature and, in the process, identifies important new avenues of trading that are replacing traditional cross-listing which took place primarily on US markets. These avenues include: the growth of cross-listing on East Asian, as opposed to US stock markets; demutualization of exchanges leading to non-resident, primarily US, broker-dealers becoming members of European exchanges increasing opportunities for trade internalization, that is, crossing of trades within the book of the broker-dealer; and advances in trading technology permitting the development of proprietary trading systems designed specifically for trading cross-listed stocks.

Part III of the *Handbook* is concerned with the regulatory challenges that are posed by stock market globalization. There are constant pressures on regulators from rent-seeking stock market participants to change rules or interpret rules favourably. In the US, from the introduction of Regulation ATS (alternative trading system) in 1998 to the Regulation SHO (short selling) amendments of July 2007, there was a radical restructuring of the US stock market that, ultimately, created large gains for certain stock market participants. The dismissal in July 2008 by the New York State Court of Appeals of all claims in the \$140 million compensation law suit against Richard Grasso, former chairman and chief executive officer (CEO) of the NYSE from 1995 to 2003, is evidence of such legitimate gains. Like the economic rents created by demutualization, there is constant pressure for large stock market participants to obtain as large a share as possible of the gains from technological progress in communications and trading. As demonstrated in the 'flash crash' of 6 May 2010, this tendency can have disturbing implications. Increased competition from globalized stock exchanges able to benefit most from enhanced technology may also work to the detriment of stock markets in emerging economies.

Chapter 10 of Part III, by Augusto de la Torre and Sergio Schmukler, deals with the implications of stock market globalization for Latin America. Being senior economists in the Development Research Group and for the Latin America and the Caribbean

Region at the World Bank, the authors have essential practical experience enabling them to analyse specific problems in Latin American stock markets. Chapter 10 combines this experience with results from a long list of impressive and influential academic contributions in this general area, for example de la Torre et al. (2010, 2007) and de la Torre and Schmukler (2006). The conclusions reached in Chapter 10 are too familiar: 'One important feature of the current globalization process is that it is characterized by segmentation across countries and firms. This is relevant because if countries and companies benefit from access to foreign capital, only a small group of countries and firms reap most of the benefits.' Chapter 10 illustrates that the gains from reform have been illusive for countries and firms in Latin American stock markets.

Chapter 11 is the second of two chapters in the *Handbook* contributed by the editor. Though events surrounding the 'flash crash' of 6 May 2010 are the central concern, this chapter also details the significant, primarily US, regulatory and stock market evolution that occurred from the crash of 1987 until the flash crash. As such, the chapter continues the narrative from Chapter 3 to include the most recent events in the stock market. In response to requests from Congress, two reports produced jointly by the staffs of the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) provide insight into the workings of the stock market that only becomes available in the aftermath of severe market disruptions. While the flash crash was a contained downside event that lasted about 15 minutes in the highly liquid markets for E-mini futures and the Standard & Poors S&P 500 ETF, the extension into the broader market lasted about a half hour with, ultimately, over 20 000 cancelled trades concentrated mostly in less liquid ETFs. The chapter concludes that, while helpful, the single stock circuit breakers introduced in response to the flash crash ignore the problems associated with short sale exemptions given to intermarket arbitrageurs. More importantly, advances in trading and communications technology could be employed to tighten restrictions on short sales needed to avoid liquidity problems associated with downside disruptions in the price discovery process witnessed in the crash of 1987 and the flash crash of 2010.

The final chapter in the *Handbook*, by Jerry Markham and Daniel Harty, examines the development and regulatory concerns associated with the replacement of exchange trading floors by electronic communications networks (ECNs). This fascinating chapter deals with two key elements in the current stock market globalization process: the impact of technological change on stock trading, and the legal and regulatory responses to this change. The lead author, Jerry Markham, Professor of Law at Florida International University, USA brings to this chapter an exceptional background in both legal studies and the history of financial markets, as reflected in the monumental, three-volume *Financial History of the United States* (Markham 2002), Markham (2006) and Markham and Harty (2008) This concluding chapter provides a fitting snapshot of the current state of stock market globalization in the world's most important stock market. As this chapter demonstrates, the technological revolution in trading and communications extends beyond the stock market to include other important interconnected security trading venues, especially derivatives exchanges. The ongoing acquisition of derivatives exchanges by global stock market groups, such as NYSE Euronext and NASDAQ OMX, provides further evidence of the impact of technological change on the stock market globalization process.

NOTES

1. The most important of recent initiatives in the US is Regulation NMS passed in 2005 and, in Europe, the Markets in Financial Instruments Directive (MiFID), initially introduced in 2004. Regulation NMS is discussed in Chapters 11 and 12 of this volume. Consistent with the overall goals of the European Union (EU), the MiFID was introduced to harmonize capital markets across the EU. Despite the intentions of both initiatives, the proximate result has been an ongoing fragmentation of market liquidity.
2. In June 2008, following a merger with the Montreal exchange, the TSX Group was renamed the TMX Group.

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