Preventing Stock Market Crises (I): Regulating Share Holding Concentration

Abstract [1]

Are current secondary stock markets perfectly competitive? We present a unique hand collected database from securities exchange regulatory agencies that demonstrates stock price manipulation is a frequent and widespread event in the secondary market. Although countries that follow US stock market regulation prohibit market manipulation by law, yet our findings evidence that market manipulation remains widespread and frequent in all the stock exchanges in our sample, including the United States, Japan, China, India, and Hong Kong (China). Therefore, we conclude that monopoly power is frequently exercised in stock markets worldwide by generating asymmetric information, and this market failure needs to be corrected through additional oversight, monitoring and regulation.

JEL classification: G01; G18; D82; K21; G28

Keyword: Financial Crisis, Concentration, Trade Based Manipulation, Imperfect Information, Monopoly, Antitrust, Securities Regulation.

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1. Introduction

Is perfect competition possible? Yes, it is possible. Our series of analysis and regulatory proposals makes perfect competition possible in the stock market if large concentration of share holdings and inducement of large trading quantities in a short time period are regulated. Our series is aimed not only for perfect competition *per se*, but for a more equitable and transparent perfect competition. This would lead to reduction of the severity and frequency of stock market crises, and taming their adverse impact, especially on small investors. Therefore, the set of regulatory proposals put forth in this paper's series would promote a more stable and predictable economic growth.

To build perfect competition with fairness and transparency in the stock market, we present a series of research findings based on financial economics. It is the first systematic study presenting frequent violations of perfect competition, and providing a detailed view of the source, mechanisms and risks of the existing monopolistic practices and the generation and utilization of asymmetric information in the secondary market. The immediate goal of the series is to propose quantifiable, adjustable and cost-effective rules for daily regulatory operations in international stock markets to protect investors, prevent crises and promote stability. In the long term, these proposals seek to provide building blocks for a better global financial architecture that can prevent world-shaking crises.

After reviewing historical examples and contemporary cases of prosecution and litigation that occurred in stock markets of both developed and developing economies, we demonstrate that market manipulation was, and still is, chronic, frequent and occasionally rampant. Reviewing the theoretical literature confirms our empirical findings that manipulators can profit without any other advantage than their large wealth. The theoretical literature also inspires antitrust action against monopolistic market manipulation. Among a number of manipulation strategies, we choose the Accumulation-Lift-Distribution (A-L-D) scheme for detailed analysis based on historical and current evidence.

Critical areas of each stage of the A-L-D scheme have been identified as targets for regulatory measures. These measures are intended to be effective, efficient, and feasible enough to be implemented by any stock market, compared to the existing law-centered approach. Furthermore, these measures are quantifiable, adjustable and cost effective so that regulators can conveniently incorporate them into daily regulatory operations.

Large concentration remains the foundation for nearly all large-scale manipulation schemes aimed at achieving substantial profits. Therefore, large concentration is selected as the first regulatory target.

The paper is organized as follows. Section 2 introduces the terminology and concepts that are utilized in later sections, such as concentration and manipulation. Section 3 reviews historical evidence exploring stock market manipulation including several notorious

contemporary international cases. This section also discusses briefly market manipulation in the futures and currency markets. The hand-collected database that we present here from recent litigation cases drawn from the SEC as well as other stock market regulators clearly demonstrate that manipulation persists. Section 4 reviews theoretical literature on the existence of market manipulation especially that of trade- based manipulation. It points out the monopolistic features of market manipulation. Section 5 explains why the most popular manipulation scheme, the Accumulation-Lift-Distribution (A-L-D) scheme, is chosen for analysis in this study. Section 6 traces a number of historical insights into the A-L-D scheme. Section 7 uncovers "soft" areas at each stage of the A-L-D scheme and proposes antitrust regulations that would limit A-L-D schemes. Section 8 examines special characteristics of our approach because it is based on economic research and the current legal approach. Section 9 proposes a set of quantifiable, adjustable and inexpensive measures for regulators. Section 10 discusses the benefits of implementing the proposed measures and Section 11 concludes.

2. Concentration, manipulation, and monopoly

Trading is directional, so is volume. We explicitly denote buy volume and sell volume; that is, we differentiate buy-initiated trade volume and sell-initiated trade volume.

Trading speed is the average measure of how fast trading volume is executed. It is defined as the executed volume over the time of order execution. It is also directional.

Buying speed means the trading speed of buy-initiated trading volume. Selling speed is trading speed of sell-initiated trading volume.

Concentration refers to the holding of shares of a particular stock by an investor at a given moment. Normally concentration implies accumulated buy volumes. [2] Short-selling leads to a kind of "negative" concentration. Concentration can be normalized against the number of outstanding shares for a longer run perspective. Concentration may, however, for short-term considerations, be normalized against the average turnover of a past period, such as the moving average three-month turnover.

For our purposes, *we focus on manipulation that utilizes large-scale concentration to induce actively the desired trading, in both direction and speed, by other investors, with the sole purpose for the manipulator to earn a substantial profit.* Manipulation is operated within a shorter timeframe than the time length it would take for the same concentration to make the same profit with no manipulative action of the same stock. Manipulation has one clear goal and two essential components. The goal is to make significant profits, within a relatively short time period. *The two components are large concentration and inducement of high trading speed in an aggregate sense.* [3] In the current paper and in the second paper in the series, we focus only on those manipulations that have both components present, either simultaneously or at different phases of the

[2] It is necessary to differentiate concentration from market power. Concentration is simply a large position. Market power is broader. It includes not only a large position, but also superior information or a high reputation (Pirrong (1996)). In this paper, we choose to focus on concentration, *i.e.*, having no other attachment to a simple large position.

[3] Each investor's trading speed may or may not be high. But the total volume of all investors traded during a given time period leads to high aggregate trading speed.

manipulation scheme. If any one of the two is missing or interrupted, the scheme will fail to qualify as a complete manipulation according to the criteria set forth.

In principle, building a large concentration is about changing the demand and supply relationship; in these instances, the manipulator becomes a monopolistic and, later on, profitable supplier of shares. Inducing high trading speed can actually create substantial demand in a relatively short time period. Inducement can be trade based or information based or a combination of the two. Here, we focus only on those that have large wealth and information asymmetry in favor of the manipulator. [4]

Large concentration is the *sine qua non* of manipulation in this paper. But large concentration itself is not sufficient for manipulation. Thus, large concentration does not necessarily lead to manipulation. For instance, if an investor buys and holds a large number of shares for a long time and then sells them at the then market price, he may make a large profit; but, the process does not qualify as manipulation since no artificial inducement of high trading speed was involved. However, a manipulation scheme must include large concentration. Typical manipulations include A-L-D and "bear raid" schemes. The former involves a large concentration of purchased shares. The latter scheme starts with a large concentration of borrowed shares.

A monopolistic buyer can lower the price, and a monopolistic seller can raise the price to increase his profit in the goods market (Pindyck and Rubinfeld (2001)). In the stock

[4] Theoretical literature has touched these two aspects in the manipulation. See Cherian and Jarrow (1995). However, it did not clarify their actual complementary roles.

market, can monopolistic pricing be achieved simply with a large concentration of shares? Not yet. A monopolistic high selling price is not automatically obtained, in a relatively short time horizon, by simply having a large concentration of the shares in the stock market. Rather, the monopolist needs to try to induce other investors to execute high-speed trades so that the share prices are pushed up substantially in rather short time duration. Then the manipulator can meet his expected price of closing his position, within planned time period. This is the key difference between achieving a monopoly in stock markets versus achieving the same end in goods' markets. [5]

Pure monopoly is rare in the goods market (Pindyck and Rubinfeld (2001)). However, it can overtake to a single stock at any time in the secondary market, but is usually a temporary monopoly, in which the duration remains flexible. This sort of pure monopoly can transpire in simply a few days (Clark, *et al.* (1934), Mei, Wu and Zhou (2004), Aggrawal and Wu (2006), and litigation cases in Tables 1.1-1.4) or last for more than a year, but oftentimes months or weeks are sufficient to achieve the manipulator's goals. The key, however, is not how long the monopoly lasts but rather to utilize a temporary monopolistic supply position and induce large demand in a short period of time [6] to realize great profit from the manipulation.

[5] Some of the literature finds it difficult to treat manipulation as illegal in financial markets (Fishel and Ross (1991), Markham (1991), Kyle and Viswanathan (2008)). However, we seek to propose measures at the operational level and avoid legal involvement.

[6] Zhu (2002) (p. 119) argues that shares change hands too quickly. Monopoly should not be labeled as manipulation. But monopoly in both the stock market and the goods market has a common purpose: large scale profit-making through dominant wealth and information asymmetry. The duration of the monopoly is unimportant.

Monopolies in goods' markets are rather exposed as the monopolist exercises the power. However, creating a monopoly in the stock market can be well hidden because such trades are conducted with less than effective and constant surveillance, nor are there preventive mechanisms to ensure interruption and deterrence. It is much easier and faster to build and exercise monopolistic power in stock markets than in the goods markets. [7] Conversely, it is also easier and faster to discontinue one's monopolistic behavior once the targeted profit is achieved or the manipulator's large position is detected by other investors or by regulators. Because it does not involve most elements that monopoly in the goods market rely on, such as leadership and management, advanced technology, a healthy and skilled workforce, access to capital, constant production and marketing, and often numerous years to reach monopoly status. What a monopoly in the stock market needs is simply large wealth at its disposal, one motivated investor, and a limited skill set for manipulation. The manipulator can be located in any venue that is connected to his trading account. Thus secrecy can be assured. The manipulator does not require much education. Even a college degree is optional (Schwager (1992)). Given the above cited conveniences, it should not be surprising that *monopolistic manipulation in the stock market is frequent and hard to detect under current regulation*. [8]

[7] Easterbrook (1986) observes that controlling the supply in the commodity futures market is simpler than in the goods market. By the same token, controlling supply of shares in the stock market is much easier and less time-consuming than controlling supply of products in the goods market.

[8] Pirrong (1996) (p. 7 and pp. 94-95) is critical of Jarrow's (1992) finding that manipulation can be frequent if the manipulator can set the sell price. Pirrong (1996) further argues that Jarrow (1992) cannot explain the rarity of corners. However, here, 'rarity' means only detected corners. How about those who are never detected? The current regulation is not very effective in detecting manipulation, especially since the literature proves that no insider information is needed to decide to manipulate the market (Hart (1977), Kyle (1985), Jarrow (1992), Allen and Gale (1992)). In addition, a former regulator supports this point, stating: "The market is the manipulation" (Cook (2009)). Marino Specogna, a convicted stock market manipulator, confesses that "manipulations occur every day in many stocks" (Specogna (2003)).

In summary, manipulation in the stock market is an exercise of monopoly power. The two terms are equivalent and will be used interchangeably throughout the remainder of the article.

3. Can stock markets still be manipulated?

Historically, especially prior to the regulatory framework implemented the Securities Act (SA) (1933), Securities Exchange Act (SEA) (1934), Commodity Exchange Act (CEA) (1936), and Glass-Steagall Act (1934), manipulation had been pervasive, chronic and occasionally so rampant to lead to frequent crises in financial markets (Pirrong (1995)), including that of the United States. (See Appendix IV for the definition of different types of manipulative methods, as defined by the International Organization of Securities Commissions, IOSCO (2000))

Between 1868 and 1921, in the US futures markets, 121 manipulation cases were detected in grains and meats by the Chicago Board of Trade and 28 in cotton. The shocking frequency of manipulation propelled the passage of the first regulation of the commodity futures market in 1922 (Grain Futures Act) (Pirrong (1996)). Since 1922, regulatory acts, particularly the CEA (1936), have not eliminated manipulation in the futures market. Several serious and notorious manipulation incidents were recorded in 1977 (the Hunt soybean squeeze), 1979 and 1980 (Hunt cornering of the silver market), 1989 (the Ferruzzi soybean manipulation), 1991 (Salomon Brothers cornering of Treasury notes) and 1995-1996 (Sumitomo's manipulation of copper) (Pirrong (1996)).

Easterbrook (1986) argues that controlling the supply in the futures market is even simpler than in the goods market. In other words, the futures market is more likely to be manipulated by monopolists than the goods market.

In foreign exchange markets, Corsetti, Pesenti and Roubini (2001) noted that high concentration was observed in speculative trading against the Malaysian ringgit in 1997, the Hong Kong dollar in 1998, and the Australian dollar in 1998. They concluded that highly leveraged institutions may establish large and concentrated positions in small- and medium-sized markets and materially influence market dynamics. FSF (2000) believed there is sufficient evidence to suggest that attempted manipulation can and does occur in foreign exchange markets and should be a serious source of concern for policy makers. In short, foreign exchange markets can also be manipulated.

Based on the Amsterdam Stock Exchange, de la Vega (1688) provided one of the earliest documents of stock pools which were used to manipulate stock prices. [9]

A series of Congressional investigations, *i.e*., the Hughs, Pujo and Pecora investigations, searched for the causality of the financial panics of 1907, 1913 and 1929, respectively. The Pecora investigation directly led to SA (1933) and SEA (1934) and establishment of the SEC, while the earlier two investigations did not entail in any legislature. But each did uncover major forms of market manipulation such as bull pools, bear raids, wash sales, and matched orders (Thel (1990)).

[9] The author used the word "ring" which has the same meaning as "pool".

The U. S. stock markets enjoyed more stable development after the implementation of the SA (1933) and the SEA (1934). Since, according to Allen and Gale (1992), the legislature is disclosure-orientated, action-based manipulation is virtually eliminated and insider information- based manipulation is also greatly curbed. But how did this affect market manipulation based on trade and public information? [10]

In 1688, de la Vega described a number of market manipulation tactics resorted to some of the largest individual or "pooled" large investor groups in the virtually unregulated Amsterdam stock exchange of the 17th century. Even though regulatory frameworks, technological innovations, and societal changes have rendered today's worldwide stock markets very different from the earlier Amsterdam stock exchange, the very fundamental nature of investors' interest in profit maximization has not changed during the past 400 years. If anything, trading strategies have evolved to circumvent regulatory rules. The Great Crash of 1929 lead to the modern regulatory framework the SA (1933) and the SEA (1934) for the U. S. stock exchanges, and most other markets in the world after their enactment followed suit (Allen and Herring (2001)). Since then, stock markets in developed countries have had more stable growth and fewer panics, most likely because of the correlation between income and implementation of these regulatory principles (Carvajal and Elliot (2007)). Other markets, operating outside of the United States, such as Brazil and Hong Kong, have experienced far more severe volatility measured by the frequency of the substantial market index drop during the last three decades. (See Appendix II for the number of stock market index declines of over 5% in trading cycles

[10] Berle (1931) pointed out that the courts had forbidden the manipulation of prices by deceptive statements and practices, but they had done little about the manipulation resulting from concerted trading.

in Brazil, Hong Kong and the United States between 1987 and 2008). A large drop in a stock market index for several consecutive days might indicate the presence of manipulation, if the general market news cannot explain such a decline. The following paragraphs will, however, question if some large investors still manipulate the U.S. and other markets to achieve substantial gains by generating extreme price volatilities, and, occasionally causing - even if unintentionally - a market index collapse.

How have U. S. stock markets fared in the last three decades? According to Aggarwal and Wu (2006), of the 142 manipulation cases brought by the SEC between 1990 and 2001, about half included some form of trade-based market manipulation. Mei, Wu and Zhou (2004) presented empirical evidence from the SEC prosecution of 159 "pump-and-dump" manipulation cases between 1980 and 2002. [11] Following the above empirical research, we created a hand-collected database from litigation documents, which we present here the first time. This database contains 28 litigation cases listed in *SELECT SEC AND MARKET DATA FISCAL 2008* by SEC (see Appendix I for selection details.) The cases are listed in Table 1.1 below

[11] This scheme involves information-based manipulation whether deriving from insider information or not.

Table 1.1 Twenty-eight SEC litigation cases in market manipulation (2001-2008)

Manipulator(s) / litigation release number	Target stock(s)	Manipulation period	Manipulation tactics	Maximum concentration or dominance	Illicit gain or stock price change
Zev Saltsman and Menachem Eitan / LR-20341	Xybernaut and Ramp	from June 2001 to December 2004	including multiple nominee accounts, false statements, and wash sales	85% and 63% of the tota1 shares issued by Xybernaut and Ramp, respectively	$39 million and $16 million in Xybernaut and in Ramp, respectively
William Todd Peever and Phillip James Curtis / LR-20733	IHI, later merged into SHEP	from January 2002 to June 2003	including multiple nominee accounts and mass mailing of deceptive newsletters	83% of the outstanding shares of IHI	$4.3 million
Rhea Laws and 4D Seismic, Inc. / LR-20412	4D Seismic	from April 2006 to November 2006	including collusion and issuing false press releases	100% of total shares of 4D Seismic	over $550,000
Anatoly Russ / LR-20430	AGG (option)	from August 23, 2006 to September 19, 2006	including intrusion and matched orders		$88,465
Daryn P. Fleming and Mathew C. Bruce / LR-20442	International Broadcasting	from October 28, 2005 to January 13, 2006	including issuing false press releases	large quantities	
Robert F. Gruder and Stinger Systems, Inc. / LR-20555	Stinger Systems	from October 2004 through March 2005	including fraudulent material misrepresentations	Stinger's second largest shareholder	from $1.25 on November 12, 2004 to $48.55 in January 2005 (3,704% rise)
Dean A. Esposito, and other brokers / LR-20456	SCL Ventures and Weida Communications	from late January to early May 2004 (SCL) and from June 2004 through April 2005 (Weida)	including marking the close	selling 3 million SCL shares and selling over $2 million Weida stocks	between 10% and 20% (SCL) and between 10% and 20% (Weida)

Strategic Management & Opportunity Corp. (SMPP), *et al.* / LR-20451	SMPP	from February to August 2004	including issuing a series of materially false and misleading press releases		from $.10 on February 2 to $4.50 on June 10, 2004 (4,400% rise over 4 months)
GMC Holding Corp. and Richard Brace / LR-20620	GMC Holding	from June 2005 to March 2006	including issuing false press releases		more than $2 million
Mario A. Pino / LR-20466	BCIT	from May 2 to July 13, 2005	including issuing false press releases		$269,033
Ryan M. Reynolds, *et al.* / LR-20496	Beverage Creations	from December 17, 2007 to March 10, 2008	including "pump and dump" scheme, promotional mailers and spam e-mail		at least $2.4 million
Robert M. Esposito, *et al.* / LR-20499	Anscott Industries	from April 2003 through July 2003	including disseminating false and misleading newsletters and spam fax		over $5 million (Esposito) from $1.40 to $4.59 (228%)
CMKM Diamonds, Inc. / LR-20519	CMKM	from January 2003 to May 2005	including false press releases through internet chat boards		over $64.2 million
One or more unknown traders / LR-20520	18 securities	from February to April 2007	including identity theft and online account intrusion		more than $66,000 in 7 weeks
SMSI, *et al.* / LR-20530	SMSI	from January until late August 2006	including issuing several false and misleading press releases		share price increase of 56% on January 17, 2006
Paul S. Berliner / LR-20537	ADS	on November 29, 2007	including drafting and disseminating a false rumor against ADS		$26,129 at a 17% decline in share prices
Edgar E. Chapman / LR-20616	FCBG	from January to August 2005	including matched orders and fake trading	approximately 86% of the total share volume between June and August 2005	maximum price increase is from $11.75 on June 1 to $18 (53%) on July 11, 2005
Joshua M. Eudowe / LR-20617	FROM and CRMZ	from December 26 through December 29, 2006	including unauthorized trading		$8,059

Mobile Ready Entertainment Corp. *et al.* / LR-20644	Mobile Ready	from January to July 2007	including issuance of false and misleading press releases		more than $2 million
Homeland Safety International, Inc. (HSII) *et al.* / LR-20645	HSII (originally Sniffex)	from October 2004 through April 2006	including collusion, and a "pump-and-dump" scheme and issuance of false press releases		total profit of over $32.5 million on share price rise from $0.80 to $6.00 (650%).
Robert L. Sonfield, *et al.* / LR-20665	Exobox	from June 2005 through at least April 2007	including making unregistered transactions and false public filings	Sonfield controlled over 88% of Exobox's public float.	exceeding $3.91 million
Dmitriy Butko / LR-20675	numerous stocks	from October 19, 2006 through November 30, 2006	including online intrusion and a "pump-and-dump" scheme		$60,362 and a potential profit of $441,232
Francisco Abellan, *et al.* / LR-20684	GHLT	from October 2005 to June 2006	including issuing false press releases through mass mailing in a "pump-and-dump" scheme		over $13 million while share prices rose from $1.83 to $8.80 (381%)
Bruce Grossman and Jonathan Curshen / LR-20712	IBOT	from June to August 2008	including matched orders and bribery		
Matthew A. Sarad, *et al.* / LR-20745	Telomole-cular	from mid-2006 to September 2007	including issuing false press releases		$6.5 million
Stephen Michael Strauss / LR-20750	Chilmark	from November 1, through December 11, 2006	including issuing false press releases	208,714 shares (9%) of the total shares outstanding	from $0.01 to $0.22 (2,100%)
Rodedawg International Industries (RWGI) and Luis E. Pallais / LR-20762	RWGI	from late 2005 through early 2007	including issuing false press releases		
U. S. Sustainable Energy Corp. (USSE), *et al.* / LR-20648	USSE	from October 2006 to February 2007	including issuing false press releases		Over $721,000 (Alice M. Price)

How did other stock exchanges perform during the same time period?

Influential and crisis-causing market manipulations were cited, to the knowledge of the authors, in Latin America, Europe, Asia and Australia. The notorious manipulator Naji Robert Nahas triggered disastrous stock market crashes in both the Rio de Janeiro and Sao Paulo Stock Exchanges on June 9, 1989. Within ten trading days, the indices of both markets dropped 67% and 61% (local currency), respectively (New York Times (1989a), Carvajal and Elliot (2009)). As part of his manipulation strategy, Nahas bought stock options and then forced the markets up by heavily buying and selling shares in trades that were actually between himself and his partners. Local stockbrokers estimated that, in the first half of 1989, half of the activity on the Rio exchange was created by Nahas and his associates. Nahas was indicted by the Brazilian government two months later (New York Times (1989b)).

Another stock market crisis, caused by Delta Securities, affected the Athens Stock Exchange on November 6, 1996. The difficulty came from a failed clearing of Delta's GRD 2.5 billion position. The crisis not only required passage by the Greek government an emergency legislative act for settlement, it also triggered the largest investigation in Greek history of exchange members and their practices. A large-scale stock manipulation scheme was discovered. The basic practice used by the manipulation scheme was matched orders. Delta Securities was a strategic manager of the manipulation scheme. Nineteen individuals were found to be involved in severe price manipulation practices, to have abused confidential information, and to have conducted artificial transactions. They

were fined for a total of GRD 2 billion (USD 7.3 million) (IOSCO (2000)).

On March 1, 2001, Ketan Parekh, the so-called Bombay Bull, defaulted on nearly 30 million Indian Rupees position on the Calcutta Stock Exchange, which caused the exchange to suffer a massive payments crisis that affected share prices across India. Following the default, Calcutta Stock Exchange officials had to draw over 500 million Indian Rupees from a special fund to cover losses; since then, the exchange has still been fighting to survive (Bhaumik (2002)). During the 8 trading days between March 1 and March 13, 2001, the indices of the top three stock exchanges of India, *i.e*., National, Bombay, and Calcutta Stock Exchanges, dropped 17%, 17%, and 14%, respectively (GFD (2009)). After the comprehensive investigation by the Securities and Exchange Board of India (SEBI), Ketan Parekh and 17 other entities were indicted in 2007. Ketan Parekh was found to be the key person involved across the board in all dimensions of the stock market scam which first surfaced in March 2001. He was also the mastermind behind large- scale market manipulation of 9 stocks before the crash in the three major stock markets. The manipulative practices included self deals (*i. e.*, wash sales), cross deals (*i. e.*, matched orders) and market corners during the period from October 1999 to March 2001 (SEBI (2007)).

Other internationally known market manipulation cases include Nomura Securities' dual-market manipulation in the Australian stock and futures markets in 1996. Two Nomura manipulators had planned to discount 10% to 20% to the closing prices of more than 300 stocks on Australian Securities Exchange on March 28, 1996. The strategy had the

potential to trigger a market wide crisis, but failed to be implemented by local brokers (SFA (2000)). Another well-known case took place in Hong Kong in 1998. It was called "double play" because both the stock and currency markets were being manipulated simultaneously by unknown speculators. Their activities almost caused a crisis, which was averted just in time by intervention by the Hong Kong Monetary Authority (Tsang (1998), Corsetti, Pesenti and Roubini (2001)). The more recent schemes include Jerome Kerviel's fictitious trading in futures and cash of stock indices in European stock markets that led the French bank Societé Générale to lose $7 billion in January 2008. At the time, the amount was the largest single loss any bank had then suffered (Clark and Jolly (2008)). Winterflood, a market maker on the London Stock Exchange, was found to be playing a pivotal role in an illegal share ramping scheme by the UK's Financial Services Authority (FSA) in June 2008 and indicted the next year (FSA (2009)). The offices of the German automaker Porsche were raided by federal prosecutors on August 20, 2009, probing the firm's alleged market manipulation of Volkswagen shares. The allegation was made by BaFin, the German financial regulator, to the prosecutor's office after investigating Porsche's attempt to gain control of Volkswagen. (Kirchfeld and Czuczka (2009)).

Each of the cases cited evidenced rampant market manipulations that had the potential to or actually resulted in stock market crashes or exchange settlement difficulties during the past three decades.

How frequent and chronic are stock market manipulations in global markets in recent years?

Lang (2004) presented a detailed analysis of how institutions manipulated the Hong Kong stock market in 2003. Khwaja and Mian (2005) found compelling evidence for a specific "pump-and-dump" manipulation scheme in the Karachi Stock Exchange. To study this further, we selected litigation or prosecution by 5 securities regulating bodies in both developed and developing economies. In addition to the earlier referenced litigation cases brought by the U. S. SEC, there were 19 cases listed by the China Securities Regulatory Commission (CSRC) between 2000 and 2006; 38 cases prosecuted from 1998 through 2007 by Hong Kong Securities and Futures Commission (HKSFC); 25 cases filed for prosecution by the Japan Securities and Exchange Surveillance Commission (JSESC) between July 1998 and June 2008; [12] and 30 convicted or settled cases launched by the Securities and Exchange Board of India (SEBI) from 1999 through 2005. These cases are listed in the following tables and their selection criteria described in Appendix I.

[12] During the 10-year span, there were 1,261 suspected cases of market manipulation out of 6,315 total market surveillance cases.

Table 1.2 Nineteen CSRC prosecution cases in market manipulation (2000 - 2006)

Manipulator(s) / target stock(s)	Manipulation duration (total trading days)	Investment * and concentration of tradable shares (%)	Self-dealing trading days (% of total)	Maximum of Vs / Vt (%) **	Days with trades (% of total)	Number of accounts
Southwest Securities / Zheda Wangxin	from February 8, 2001 to September 20, 2004 (866)	RMB 3.3 BLN (80.68%)	265 (30.6%)	60%	538 (62.12%)	1,783
Cui Junshan / Jinde Fazhan	from December 4, 2000 to July 20, 2006 (1,341)	RMB 2.1 BLN (81.33%)	848 (64.58%)	99.59%	1,313 (97.71%)	3,917
Xingan Securities / Sanjing Pharmaceutical	from August 26, 2002 to December 30, 2005 (807)	43 MLN shares (44.21%)	385 (47.71%)		669 (82.9%)	1,766
Hantang Securities / Langchao Software	from June 27, 2002 to September 3, 2004 (527)	RMB 0.77 BLN (74.05%)	420 (79.70%)	79.18%	> 425 (80.64%)	1,872
Hantang Securities / Baihua Village	from January 10, 2003 to September 3, 2004 (394)	RMB 0.17 BLN (34.81%)	255 (64.72%)	80.04%	> 255 (64.72%)	2,495
Hantang Securities / Feida Environmental	from July 22, 2002 to September 3, 2004 (514)	RMB 0.4 BLN (59.26%)	334(65%)	75.60%	> 334 (65%)	4,294
Hantang Securities / Hengda Real Estate	from September 26, 2000 to September 2, 2004 (928)	RMB 0.7 BLN (79.48%)	487 (52.48%)	95.79%	> 487 (52.84%)	2,296
Hantang Securities / Nanfang Shareholding	from January 14, 2002 to September 3, 2004 (631)	RMB 0.57 BLN (63.11%)	407 (64.50%)	79.92%	> 407 (64.50%)	1,696
Hantang Securities / Tongfeng Electronics	from September 20, 2001 to September 3, 2004 (703)	RMB 0.26 BLN (32.07%)	454 (64.58%)	61.81%	> 454 (64.58%)	1,645

Hantang Securities / China Software	from September 20, 2001 to September 3, 2004 (555)	RMB 0.60 BLN (76.63%)	322 (59.82%)	80.23%	> 322 (59.82%)	4,554
Northern Securities / Taishan Oil	from March 21, 2000 to December 30, 2005 (1,386)	RMB 8.3 BLN (61.35%)	633 (52.70%)	85.17%	1,201 (86.70%)	8,817
Xianghe Holding and colluding partners / Sanmu Group	from November 5, 2001 to January 31, 2005 (771)	RMB 4.4 BLN (> 80%)	660 (85.6%)	98.8%	754 (97.8%)	3,879
Shengdelong Investment and colluding partners / Qinghai Glue	from February 6, 2001 to August 22, 2003	? (78%)		64%		3,494
Kelian Investment and colluding partners / Zhenghong Tech	from January 25, 2000 to October 22, 2003	0.1 BLN shares (90.10%)		96.84%		5,072
Sang Junqing and colluding partners / Jinan Department Store	from August 22, 2000 to April 15, 2002	? (39.5%)	from September 7, 2000 to December 23, 2001	53.35%		878
Zhu Yaoming, *et al*. / Kainuo Tech	from May 8, 2001 to June 19, 2003	? (49%)	100%	68.96%		4,673
Xin Naiqi, *et al*. / Handing Fund	from September 6, 2000 to August 5, 2003	? (63.47%)	from September 6, 2000 to December 31, 2001	78.44%		> 1,856
Hao Yiping, *et al*. / Jingbo Fund	from September 2000 to November 2001		332 orders and 51 MLN shares			397
Xu Shuishi, *et al*. / Digital Geodesy	from September 2000 to November 2001	RMB 1.7 BLN (77.79%)		from December 14 to 20, 2000 (5 days) and 2.51 MLN shares		850

* Investment is either in RMB or in number of shares

** Vs is self-dealing volume and Vt total trading volume

Table 1.3 Thirty-eight HKSFC cases prosecuted for market manipulation (1998 - 2007)

Manipulator(s) / Target stock(s)	**Manipulation period**	**Manipulation tactics**	**Price change (percentage)**
Lau Kin Chung / SEA Wood	from April 1998 to July 1998	marking the close	
Yung Wai Shun, Sidney / 3 stocks	from April 1998 to June 1998	marking the close	
Ngai Man Sang, Vincent / Dong Jian	from September 15, 1998 to January 19, 1999	creating a false and misleading appearance of active trading	
Lo Yiu Man / PAL	from August 25, 1999 to September 2, 1999	creating a false and misleading appearance of active trading	
Wang Fang / Fujian	on December 30, 1999	marking the close	from $0.140 to $0.192 (37% rise)
Chan Kiu Chi / Man Sang	on January 31 and February 1, 2000	creating a false market	20% down and 48% down, respectively
Lu Wing Lin and Hung Fan Lau / SEA	from September 17 to December 1, 1999 (Lu) and from September 17 to November 12, 1999 (Hung)	matched orders	
{X}(name masked) / Good Fellow	from August 2 to August 31, 1999	matched orders	
Lau Kwai Ngor / Perfectech	from January 3 to February 18, 2000	creating a false and misleading appearance of active trading	
Choy Wai Zak and Yuen Sze Ning / Parkview	from November 19 to 23, 1999	matched orders	
{X1} and {X2} / Grand Field	from March 20 to June 7, 2000	creating a false and misleading appearance of active trading	
{X} / Climax	from September 20, to October 20, 2000	creating a false and misleading appearance of active trading	

Wong Chi Kit / Yeebo	from February 12 to March 9, 2001	marking the close	inflated or depressed the closing price by 5% to 14%
{X} / China Development	from January 2 and March 7, 2002	marking the close and advancing the bid	
Poon Lak To, Joseph / Pioneer Global	on March 15, 23 and 27, 2001	marking the close and advancing the bid	
Choi Kam Tui / Climax	from July 4 to September 21, 2001	marking the close and advancing the bid	
Wong On Ching / Victory	in September 2000	matched orders for marking the close	from $0.177 to $0.231 (30.5% increase)
{X} / SEEC	from February to March 2002	marking the close and advancing the bid	
Lam Yat Wa / Daido, Perennial, and Chinney	from June to July 2001	marking the close	
{X} / MUI	from January 9 to May 21, 2003	marking the close	pushed up the closing prices by 8% to 60%
Han Sze Chao and Super Glory Int'l Ltd / Fortuna	from January to May 2002	price pegging	
{X} / Fujikon	from September 3 to October 31, 2001	creating a false or misleading appearance of active trading	
Ho Sze Man and {X} / Fujikon	from September 3 to October 31, 2001	wash sale and matched orders	
Chow Lung On / Tern	on May 10, 2002	matched orders	28% increase
{X} / Tradeeasy	on October 18, 2002	marking the close	30% increase
Zou Yishang / Dynamic	from December 7, 2001 to January 31, 2002	creating a false or misleading appearance of active trading	
{X} / EVI	on May 8, 2002	matched orders	
Tang Shui Fai / Artel	from June 28 to July 8, 2005	marking the close	
Stephen Lee Sing Wai / Essex	from February 14 to March 31, 2003	matched orders	from $0.10 to above $0.22 (120% rise)
Cheung Wan Chiu / Innovis	on February 8, 14 and 16, 2005	marking the close	maximum increase of 16%
{X1}, {X2} and {X3} / GP Nano	from January 18 to June 11, 2002	including matched orders	increased significantly market turnover

Wong Wei Yin Peter / SiS	on May 18 and 20 and June 9 and 15, 2004	marking the close	pushed up the closing prices by up to 10%
Chaw Chi Wai Ivan / VST	from May 5 to August 26, 2005	marking the close	pushed up the closing prices by up to 14%
Chan Tit Yuen / 2 stocks	from October 26 to 31, 2005	fake trading	inflated the demand by over 100% and 450%, respectively
Yeung Fong Shiu / a derivative warrant of ICBC	on May 17, 2007	fake trading and wash sale	inflated the price by over 300%
Leung Kam Lai, William / 5 stocks	15 occasions from November 11, 2005 to March 21, 2006	marking the close	pushed up the closing prices by 10% to 80%
Patrick Fu Kor Kuen and Francis Lee Shu Yuen / derivative warrants of Macquarie	from January 2004 to January 2005	matched orders	inflated the turnover in the warrants by over $450 million
Chan Chin Yuen, Elaine Au Yeung Man Chun, Mr Chan Chin Tat, and Chui Siu Fung / ASH	from August 1 to September 5, 2005	matched orders	inflated the price by 78% (market capitalization of $4 billion) *

* Largest market manipulation case based on inflated market capitalization due to manipulation in Hong Kong Stock Exchange history.

Table 1.4 Thirty SEBI prosecution cases for market manipulation (1999 - 2005)

Manipulator(s) / target stock(s)	Exchange(s)	Manipulation period	Manipulation tactics	Portion of daily or total volume in the target stock(s)	Price change (%)
S. Jhunjhunwala & Co. / TCL	Calcutta SE	from January 1 to August 3, 2004	wash sales and matched orders	28% of total volume (21% of total buy and 35% of total sell)	From Rs. 23.50 to Rs. 322 (1,270% rise)
Shri Tushar Jhaveri / EIL	Bombay SE	from June 26 to September 5, 2000	wash sales	41% of the total volume	from Rs. 2.70 to Rs. 19.85 (635% rise)
Basant Periwal & Co. / NIL	Calcutta SE	from April to November 2005	wash sales and matched orders	13.15% of the total volume	from Rs. 12.70 to Rs. 42.95 (238% rise)
Shri Vasant H. Bissa / SLIL	Bombay SE	from January 2 to September 13, 2002	wash sales and matched orders	51.6% of the total volume from April 15 to 23, 2002	from Rs. 283 to Rs. 482 (70% rise)
Porecha Global Securities Pvt. Ltd. and Shri Arun Porecha / MTL	Bombay SE	from October 24 to November 11, 2000	matched orders	71.46% - 99.89% of the daily volume	
Shri Minoo Pestonji / APL	Bombay SE	from August 2 to August 31, 2000	wash sales and advancing the bid	buy order of 218,000 shares at Rs. 4 per share (last traded price was Rs. 3.2) on August 22, 2000	from Rs. 1.85 to Rs. 5.50 (197% rise)
P. Suryakant Shares and Stock Brokers Pvt. Ltd, / OMML	Bombay SE	from April 8 to July 9, 2002	matched orders		from Rs. 15.10 to Rs. 35.50 (135% rise)
Purshottam Lal Kejdiwal / BIL	Calcutta SE	from June 9 to September 16, 2005	wash sales	1.3% of outstanding shares	from Rs. 2.10 to Rs. 16.85 (702% rise)
Ahilya Commercial Pvt. Ltd. / SLPL	Calcutta SE	from April 21 to September 16, 2005	wash sales and matched orders	13.38% of total market volume	from Rs. 25.50 to Rs. 249.90 (July 7, 2005) (880% rise)

M. Bhiwaniwala & Co. / Bacchhat	Calcutta SE	from March 1 to March 31, 2004	matched orders	35% of total volume	from Rs. 12.25 to Rs. 81.10 (562% rise)
Shyam Lal Sultania / NIL	Calcutta SE	from April 25 to November 8, 2005	matched orders	12.53% of the total volume	from Rs. 12.70 to Rs.42.95 (238% rise)
Prakash Nahata & Co. / TCL	Calcutta SE	from January 1 to August 3, 2004	matched orders	20% of the total volume	from Rs. 23.50 to Rs. 322 (1,270% rise)
Murari Lal Goenka / CIL	Calcutta SE	from June 24 to November 7, 2005	wash sales and matched orders	29% of the total volume	from Rs. 257.90 to Rs. 271.00 (5% rise)
G. R. Industries & Finance Ltd. and partners / GRIFL	Calcutta SE	from September 7, 2004 to February 28, 2005	matched orders	more than 83% of the total volume	from Rs. 2.00 to Rs. 170.20 (8,410% rise)
Dinesh Kumar Lodha / RFSL	Calcutta SE	from February 16, 2004 to February 28, 2005	matched orders	54.6% of the total transactions	From Rs. 1.95 to Rs. 225.00 (11,438% rise)
Ravi Vishnu Securities Ltd. / AOIL	Madhya Pradesh SE and Bombay SE	from November 6 to December 29, 2000	matched orders and advancing the bid	55% of total market volume	from Rs. 4.60 to Rs. 19.15 (316% rise)
Sanchit Financial and Management Services Ltd / EIL	Bombay SE and National SE	from November 24, 1999 to February 11, 2000	matched orders		From Rs. 32 to Rs. 800 (2,400% rise)
12 related entities / DFL	Bombay SE	from April 10 to August 31, 2001 (P1) and from April 1 to June 28, 2002 (P2)	matched orders and collusion	75% of total volume (P1); 50% and 32% of total buy and sell volumes, respectively (P2)	from Rs. 1.00 to Rs. 14.45 (1,345% rise) (P1) and from Rs. 42.35 to Rs. 82.90 (96% rise) (P2)
Tropical Securities & Investments	National SE	from March 14 to April 24, 2001	wash sale	23.95% of the total volume	from Rs. 49.50 on March 14 to Rs. 64.50 on April 20, 2001

Private Ltd. / DCM					
Shri Mahendra A. Shah / SCL	Bombay SE	from October 1, 1999 to January 4, 2000	creating artificial volume and price rise	19% of the total volume	from Rs. 19.35 to Rs. 106 (448% rise)
Shri Vipul Bhagwandas Shah / GFL	Bombay SE	from July 31 to November 27, 2000	matched orders and collusion	19.63% of the total volume	from Rs. 60 to Rs. 113.50 (89% rise)
ASK Holdings Pvt. Ltd. / GIL	Bombay SE	from December 19, 2002 to January 17, 2003	wash sale and collusion to unload large quantity	bought 9,09,580 shares or 27.72% and sold 5,08,080 shares or 14.36% of the total shares traded	from Rs. 17.95 on December 19, 2002 to Rs. 52.90 on January 17, 2003 (195% rise)
Dhanlaxmi Cotex Ltd. / SIL	Bombay SE and National SE	from July 2, 2001 to January 2, 2002	circular trading and collusion in price pegging	traded 21% of the volume in SIL at BSE and 7% of the volume in SIL at NSE	
Pivotal Stoxare Ltd. / OTPL	Vadodara SE and Bombay SE	from November 1, 1999 to February 9, 2000	collusion in price lifting to unload large quantity	sold 25.46% of the capital of OTPL	from Rs. 3.55 to Rs. 23.60 (565% rise)
Shyamlal Sultania / SPL	Calcutta SE	from March 17 to July 14, 2005	matched orders	12.55% of the total volume	from Rs. 21.30 to Rs. 249.50 (1,067% rise)
A. V. Shares & Stock Broking Private Ltd., *et al.* / GCML	Calcutta SE	from June 17 to September 20, 2005	matched orders	90.97% of the total volume	from Rs. 1.25 to Rs. 15.10 (a rise of 1108% within 2 months)
Mukesh Dokania & Co. / AFSL and ACCL	Calcutta SE	from July 2 to October 12, 2001	matched orders	32% of total buy volume and 39% of total sell volume	from Rs. 3.20 to Rs. 47.50 (1,384% rise)
EXV Finvest Pvt. Ltd. and its	Delhi SE	from January 1 to	matched orders	80% of the total volume	from Rs. 3.50 to Rs. 43

Directors Shri S.N.Singh and Shri S.G.Dhanuka / MHL		August 31, 2001			(1,130% rise)
Chandrahas R Kulkarni / HTL	Pune SE	from November 16, 1999 to March 31, 2000	circular trading *	more than 90% of the total volume (along with other brokers)	from Rs. 275 to Rs. 815 (196% rise)
Deepak Kumar Shantilal Jain / IDFC	Bombay SE and National SE	from August 8 to August 19, 2005	multiple (686) fictitious accounts and cornering	bought 236,859 shares at Rs. 40; sold 131,220 shares at Rs. 60 and 114,408 shares at Rs. 67	unlawful gain of Rs. 5,476,653

* Circular trading is equivalent to matched orders. We have, however, noted from a few SEBI cases that circular trading can also occur among more than two colluding parties.

From July 1, 1998 to June 30, 2008, based on investors' complaints, the JSESC sought to prosecute 25 cases that had been investigated for market manipulation. Since no case reveals the name(s) of the manipulator(s) and given the lack of consistency in data presented in all the cases, we cannot construct a meaningful table out of them. Rather, the reader is referred to Table A3.2 in Appendix III, which shows the ratio of investigated cases to the total complaints by investors.

The above cited empirical findings, which only detail instances reported and investigated, reveal that manipulation remains a chronic, frequent, and occasional rampant issue facing stock markets in the twenty-first century. The far-reaching implications of these cases underscore the convicted Canadian stock market manipulator's confession that manipulation of untold numbers of stocks occur every day (Specogna (2003)).

One fact, however, does remain clear. Every stock market can be manipulated under the current regulatory framework. [13]

How does the theoretical literature justify the existence of stock manipulation?

[13] McGoun (2008) argues that markets are indeed inherently manipulable. Chris Cook, former director of the International Petroleum Exchange in London, observes from the oil futures market that, "The market is the manipulation" (Cook (2009)).

4. Theoretical literature on market manipulation

Hart (1977) models a general stock market with one monopolist and numerous price-taking traders. In a Walrasian equilibrium framework, Hart (1977) derives general conditions for the existence of profitable speculation, in a dynamically unstable equilibrium; and, in some cases, in a dynamically stable equilibrium. He concludes that under fairly general conditions, the manipulator can profit at the expense of small traders simply by engaging in speculative activities.

Kyle (1985) modeled one monopolist and numerous non-monopolists in one stock market. The monopolist has insider information while market makers cannot always distinguish if a trade has been placed by a monopolist or noise traders. By assuming a linear relation between return and volume, Kyle (1985) proves that the monopolist can maximize profits in speculative trading by exploiting his monopoly power in continuous auction equilibrium.

Jarrow (1992) states explicitly that the goal of his paper is to prevent market manipulation. Large wealth is the sufficient condition for a manipulator to make a profit by trading only. With large wealth, the manipulator can realize a profit even without an informational advantage. Here, the most important characteristic of the manipulator is that gain can be sometimes achieved without risk.

In practice, this characteristic of a manipulator is extremely important. Several early historical findings supported Jarrow's point. In the seventeenth century, de la Vega (1688) recorded that a manipulator is a rational individual who avoids risk; moreover, a manipulator of stocks will not start trading before his calculations assure him that he will profit. In the first half of the twentieth century, Mathias (1936) found that a pool manager not only specifies the stock to be manipulated, but also plans the duration and scope of the operations.

Allen and Gale (1992) study conditions when manipulation is profitable. They find, again, that a manipulator can make a profit by buying and selling a large volume of shares. The finding operates under the assumption that small traders cannot not distinguish between an informed large trader and a manipulator who has large wealth but no insider information. Indeed, the crucial condition giving the manipulator an advantage rests in his having large wealth at his disposal. Allen and Gale (1992) also categorize three kinds of market manipulation: action based, information based, and trade based. They point out that trade- based manipulation is difficult to detect and thus has not been effectively regulated. In reality, of course, a manipulation scheme can either be trade based or combine trade-based and information-based manipulative tricks (See Tables 1.1-4).

Cherian and Jarrow (1995) assert that trade- based manipulation is an exercise of market power. The authors' justification of this claim to market power based on two different grounds. One is Walrasian, meaning that large buys increase the aggregate demand, and therefore increases price (the opposite of a large sell). The other reason underlying their

claim is expressed in a market-microstructure explanation, in an information-effect model. That is, if a market maker cannot distinguish between a speculator and an informed trader because of the large volume, he will raise the price when a speculator buys and lower the price when a speculator sells. The manipulator's large wealth and ability to remain unknown give him both a trade and information advantage in the manipulation scheme.

The above articles make different theoretical assumptions but arrive at the same conclusion: manipulation scheme based on a large trades' only is theoretically profitable. Large wealth is explicitly or implicitly understood to be the main precondition for manipulation. Secrecy is also important. The next question is how to utilize large wealth and secrecy to assure a manipulation scheme yields a large profit? In other words, what is the key in the manipulation strategy after a large concentration of share holding is built up? Avery (1998a, 1998b) answers the question to a certain extent. According to Avery (1998b), the manipulator's success depends on whether he can induce herding which would ensure that many other traders' buy volumes follow each other in a relatively short time period. Another important insight Avery (1998a, 1998b) has provided is that a manipulator can trade multiple times while other investors trade only once. However, Avery (1998a, 1998b) does not explain how the manipulator induces other buy volumes to follow.

This question will be fully discussed in the following article, "*Preventing Stock Market Crises (II): Regulating trade-based price-lifting*." (Yan *et al*. (2010b)) Here we only note that the essence is that large buy quantities are necessary to push up the price to a

sufficient height within a short time. To put it in another way, high buying speed lifts prices. Herding of small investors can be induced as a part of these events, but it is a consequence and not a reason. [14] In brief, a complete manipulation strategy is mainly composed of two phases: build a large concentration and induce a high trading speed. Early empirical literature, such as Montgomery (1933) and Clark, *et al*. (1934), supported this point. Numerous enforcement orders displayed in Tables 1.1-4 evidence it.

In addition, Fishman and Hagerty (1995), John and Narayanan (1997) and Huddart *et al*. (2001) point out that manipulative trading may occur due to the presence of mandatory disclosure laws. Historical and contemporary cases show that manipulation can occur with or without a disclosure requirement of listing companies. So a disclosure requirement does not provide a sufficient or a necessary condition that could limit or eliminate manipulation. But, interestingly, it might provide some degree of convenience to manipulators. Chakraborty and Yilmaz (2004) argue that manipulation is possible at any equilibrium by the informed speculator who can trade repeatedly, under the conditions that the horizon is long enough and every individual investor is uncertain about the existence of an insider. However, the time horizon depends on the manipulator's strategy. It can be longer than a year, and it can be as short as two days (for example, Aggrawal and Wu (2006), Mei, Wu and Zhou (2004))

[14] Literature on herding has not shed much light on this research, because its' analysis starts after herding is activated; very little effort has been placed on trying to understand how herding is generated by manipulation. Hirshleifer (2009) concludes, after reviewing references listed on 18 pages on herding, that source of thought contagion has not yet been explored to any appreciable extent in the literature on herding.

Starting with Hart (1977) and Kyle (1985), throughout the literature, the manipulator has always been portrayed as an explicit or implicit monopolist. As described by Cherian and Jarrow (1995), his power to affect market prices can come from the two sources, already cited: large wealth and identity secrecy. Schwartz (2001) observes that the tendency of the order flow to concentrate in major stock market centers raises fears of monopolistic power. In the same volume of Schwartz (2001), the then Acting Commissioner of the Securities and Exchange Commission, Laura S. Unger, questioned whether antitrust policy should be enacted for the U. S. equity markets? Allen and Herring (2001) note that banking regulation includes antitrust laws to prevent banking crises. Given that global stock market crises occurred frequently, why is it that antitrust laws have not been implemented in the stock market?

The theoretical literature has provided answers to such fundamental questions such as, can manipulation occur based on large trades only. How does the stock price get lifted up by the manipulator? What does the manipulator do during the distribution stage? How does the stock price behave after he finishes selling his shares, and there is no more support for the artificial price? And what are the effects of the manipulation stages on investor protection, market stability and, even, on the potential leading to a crisis? These critical questions have not been answered by the theoretical literature.

Therefore, we abstract the concept of antitrust regulation from the theoretical research. To find sufficient evidence for us to transform the concept into a principle of regulatory proposals, we rely mainly on empirical data. The prosecution cases from both the

empirical literature and our collected database not only enable us to understand critical areas informing a complete manipulation scheme, but also reveal the true purpose of each individual stage in the scheme where the manipulator has seemingly conflicting objectives.

5. We choose the Accumulation-Lift-Distribution (A-L-D) scheme to study

It is essential to understand in detail how a manipulator can make substantial profit, so that subsequently, effective regulatory proposals can be proposed. Therefore, we follow the entire cycle of one manipulation scheme rather than conducting a conventional longitudinal or cross-sectional analysis. Cross-sectional analysis provides information about the prices (and sometimes the trading volume) of multiple stocks at a given moment and longitudinal study tracks the price (and sometimes the volume) history of one particular stock. Both are stock price centered. Neither focuses on the trader. Nor can either uncover the true purpose behind each trade, let alone a complete trading strategy.

As a contribution to regulatory efforts, this paper selects one well-known manipulation strategy. It belongs to long manipulation, that is, the manipulator profits from owning the shares (as opposed to short manipulation, when profit is obtained by first selling a security short). The scheme is characterized by three stages, a trilogy of *accumulation, lift and distribution*. These categories were first used by Lang (2004) and were also described by Montgomery (1933) and Mathias (1936), based on the experience of the

New York Stock Exchange. It is denoted as the A-L-D scheme throughout the remainder of this article. [15]

We choose the A-L-D scheme to study because long manipulation enjoys the most popularity among manipulation schemes (Pirrong (1996)). Markham (1991) found that 37 our of 44 (84%) CEA (1936) cases were market power manipulation schemes. Aggaral and Wu (2006) found that 84.5% of 142 SEC litigation releases from 1990 to 2001 focused on long manipulation. However, the most compelling reason is that in our database, the 140 prosecution cases presented in Section 3, we found 132 of the cases (94%) were either an A-L-D scheme or a general long manipulation scheme.

5.1. Historical evidence of the A-L-D scheme

Before the SA (1933) and the SEA (1934) were passed, Montgomery (1933) vividly describes the proliferation of "bull pool" manipulation schemes. He stated that one needs to understand the manipulation methods used by the pools or other forms of organized speculation to have a complete picture of the market conditions. He pointed out that the A-L-D scheme is a typical pool method and many aspects of the methods employed tend to be nearly universal. According to his description of the A-L-D scheme's progressive steps, the first demands that the manipulator must have or have access to large wealth to dispose at will. Then, during the accumulation stage, two important issues arise: the protection of the process from other buyers by using the shake-out tactic; and, sufficient

[15] As discussed earlier, both large concentration of share holding and inducement of high trading speed are involved in a manipulation scheme. The term "pump-and-dump" may be vivid, but it does not connote the importance of high concentration. Therefore, we prefer to use the term, the A-L-D scheme throughout.

number of shares to be absorbed from the outstanding shares so that the supply of shares in the hands of other investors is reduced to the degree that the next step can be executed. Once the accumulation stage is completed, the manipulator has a number of tactics to raise the share price. This happens because the supply of shares in the hands of other traders has been greatly reduced, and therefore the price impact of the buy volume is relatively large. During this stage, the crucial point is to induce high buy volumes within a short time period. This is usually accomplished via induced herding: a large number of small investors follow up with buy orders. The manipulator's objective at this stage is to purchase as few shares as possible while striking to achieve a higher price level. Once the desired price level is reached, or if there is a serious decline in the price, the manipulator will start to distribute, that is, to sell his holdings to a large number of small investors and occasionally large investors.

Mathias (1936) presents the most detailed to-the-point description of an A-L-D scheme that reflects the above styled scenario. That is, both during the accumulation and the distribution stages, the manipulator tries to trade in small quantities so as not to generate too large a price impact. The lift stage is the time to "mark up" stock prices; it is during this time that he will try everything possible to "pump" stock prices. Once the lift stage's objective - increased prices - meets or exceeds expectations, the manipulator needs to distribute his large quantity of shares carefully. Sometimes he will even "strategically" buy a few shares while selling a large amount, to make the price change look like it is

climbing a little during the dropping trend to avoid suspicion of other investors or regulators.

Another important observation Mathias (1936) has made suggests that since the A-L-D scheme is a form of manipulation that depends on the large concentration of share holding and high buying speed of shares within a relatively short time, it can cause dramatic distortion of the targeted share price within a very short time span. This type of manipulation can greatly change the ecology of a stock price's time series. If one uses a buy-and-hold order (for the same number of shares and sell at the same price level that would accrue without manipulation but rather from the stock's natural development) as a comparison, the artificiality of the A-L-D scheme greatly shortens the time within which the same profit can be achieved. The consequence of such a scheme on the stock market is that such a short-term and artificially-created form of intense volatility generates the vulnerability of all the investors in the stock or the entire market that may lead to panic selling or stock market crises. Allen, Litov and Mei (2006) make the same observation on the 10 successful stock market corners before 1934.

6. Manipulative objective of each stage of the A-L-D scheme

6.1 Accumulation

A successful A-L-D scheme demands the manipulator to have access to a relatively large amount of wealth at his disposal. The objective of the accumulation stage is to turn large

wealth into a large number of shares at a reasonably low price while reducing the uncertainty in trading costs due to other investors' following. The essence of this stage is to control the supply of shares or, put differently, to build up a dominant concentration of shares in preparation for the next stage of manipulation. To achieve this objective without interruption or delay, the manipulator needs to deter other serious buyers. For ultimate profit maximization, the manipulator wants the price impact of each buy order to be minimum, so as to ensure that the total transaction cost at this stage remains low. As for the basis of the A-L-D scheme, the underlying characteristic during this stage is to manipulate the share supply.

6.2 Lift

When the accumulation has been completed, the supply of the shares that could be in the hands of other traders has been greatly reduced. Therefore, at the lift stage the price impact of buy volumes is effectively increased. [16] The stock becomes very attractive for small investors because of its fast and continuous rising prices (Bernheim and Schneider (1934)). At this point, the value of the stock can increase rapidly and positively impress investors who want to trade on what seems to be a quickly rising stock.

As can be seen from all the recent regulatory cases drawn from both the SEC and other regulating agencies that are presented in our database, the manipulator always engages in some form of deceptive activity to "pump" up the stock price by a substantial percentage

[16] The convicted manipulator Marino Specogna confirms this point (Specogna (2003)). On the other side of the same token, the sell liquidity is substantially increased. The manipulator is facing increasing risk of substantial selling volumes by other investors.

within a short period of time. The manipulation can be simply trade based, such as wash sales, matched orders, and fake trades; it can be information based, such as issuing false and misleading press releases and spreading rumors in Internet chat rooms, or any combination of these devices. The essence is to create high demand in as short a period of time as possible. Therefore, it is at this stage that the manipulator can achieve the large price impact his tactics seek. Even though he may pretend to be busy with executed (wash sales or matched orders) or non-executed (fake trading) transactions, his intention is to increase his share holding by as little as possible at this stage. Eventually other market participants decide to enter the market with the supposed heightened demand, and thus small investors, or, at times, even large investors can be induced to buy. These activities will result in large price increases, all transpiring over a very short time period. From the regulatory cases listed in Section 3, herding of small buy volumes is very likely generated by the manipulator's seemingly high turnovers. In essence, this stage targets manipulation of demand within a collapsed timeframe. In other words, the scheme manipulates buying speed.

6.3 Opposite objectives at the accumulation and lift stages

Regarding price impact of buy volumes, the manipulator has opposed objectives during the accumulation and lift stages. He wants to minimize buyers' price impact during accumulation. But he wants to maximize buyers' price impact during the lift phase. Viewed from the vantage point of manipulative emphasis, accumulation is trading volume manipulation, or manipulation of supply; lift is manipulation of demand in a short

time period, or of buying speed. Because one stock may be at the accumulation stage of a manipulation scheme when another stock is at the lift stage of another manipulation scheme, the observable price impacts for the two stocks will be significantly different. This is one reason why cross-sectional data analysis cannot effectively reveal manipulation. Therefore, one has to follow the complete cycle of the A-L-D scheme to understand seemingly conflicting objectives and seemingly inconsistent price behaviors.

6.4 Distribution

After the accumulation and lift stages have been executed, the remaining stage, distribution, is invoked to obtain the ultimate realized profit. Once the price level has met or surpassed the price target, the manipulator starts the distribution process. The objective at this stage is that his sell volumes have minimal price impact, which explains why he wishes to remain anonymous throughout the process. Therefore, he sells in sliced volumes in a gradual fashion. Sometimes, he buys some shares to avoid other investors' suspicion. But the real purpose is to sell. The manipulator can proceed in this fashion when he does not have to rush to close his position.

But, it is just at this stage that the manipulator is more vulnerable than at any other stage in turning his unrealized gain into realized profit. His major vulnerability is loss of secrecy, which would be immediately followed with uncertainty and increasing transaction costs. Several situations can trigger this vulnerability. One is that serious selling by other investors occurs before or during the distribution process. The other is if

a large short-selling volume would enter the manipulated stock before or during the distribution stage. [17] The third scenario is a large unexpected event that prompts panic-selling, such as the onset of a war, a natural disaster, or a coup. If any of these unexpected scenarios should occur, the manipulator's best decision, based on profit maximization (more accurately, cost minimization), is to dump all of his holdings as soon as possible to avoid any uncertainty that could accrue due to time delays. Thus, a manipulator can turn sharply from a slow to an extremely fast selling speed.

The manipulator's vulnerability can become the vulnerability of the market. The manipulator's response to vulnerability can lead to several possible consequences. The best case, most orderly scenario would arise if he does not panic and sells as planned via slow distributions, which is very unlikely. A second less orderly scenario would arise if he suddenly sells his accumulated shares. This will, in turn, generate a large price drop in the stock in a short period of time, but other stocks in the market are not affected. The worst case scenario arises when a sudden large sale of stocks causes market-wide panic-selling, which can develop into a single stock crash or even a marketwide crisis. [18]

The above analyses have revealed that concentration building and buying speed manipulation mark the two key elements in the A-L-D scheme. However, each is used in

[18] Naturally, the A-L-D long manipulators hate short-sellers who try to profit substantially by detecting large positions built by the former. There were several well-known historical cases of cornering short-sellers analyzed recently by Allen, Litov and Mei (2006).

[18] Empirical literature shows that the share price collapses after the completion of the distribution process by the manipulator (Aggraval and Wu (2006), Mei, Wu and Zhou (2004) and Allen, Litov and Mei (2006)) which is confirmed by the former manipulator (Specogna (2003)). This is a natural vulnerability of a manipulated stock. But the consequences of the price collapse of a manipulated stock have similarity to quick dump of a large position by the manipulator. The market suffers no matter if the manipulator's distribution is smooth or rushed by uncertainty.

separate stages of an A-L-D scheme. [19] The vulnerability of the scheme at the distribution stage is very prone to extreme price drops or even a market-wide crisis. To achieve the regulatory principles stated earlier, one needs to prevent both large concentrations and fast trading speeds.

7. Antitrust against A-L-D manipulation

Carrying forward the antitrust spirit abstracted from the theoretical literature, we analyze and target antitrust measures for each of the vulnerabilities of the A-L-D manipulation scheme.

7.1 Vulnerabilities of A-L-D stages

7.1.1 Accumulation:

The manipulator's vulnerability is if he can convert large wealth to large concentration of shares. Hence the maximum number of accumulated shares by one investor can be a regulatory target. The pace of accumulation during a given time period can be another important target.

7.1.2 Lift:

[19] Bear raid is another type of manipulation scheme. It starts with quick and heavy selling. So both concentration of sell volume and fast selling speed are used simultaneously by the manipulator. Therefore, the results from this paper and the paper of regulating price impact will need to be combined to prevent bear raids from forming.

There are two main areas of lift manipulation. One is trade based, which divides into two types. The first type of trade-based manipulation depends on creating false and relatively high daily turnover through executed trades (e.g., wash sales or matched orders) or unexecuted orders (e.g., fake trading). Both come with large orders even though no new shares are added to the manipulator's previous position of accumulation. The second type of trade-based manipulation is to advance bidding prices. Therefore, the daily volume of either executed or unexecuted orders, in absolute terms, by the manipulator can be a candidate for regulation. The other type of lifting manipulation is information based. Touting the stock that the manipulator has already accumulated is its key feature. The print and electronic media have provided easy conduits for manipulation. Information-based manipulation has to be effectively regulated and measures will be proposed separately (Yan *et al.* (2010f)). [20]

7.1.3 Distribution:

At this stage, other traders' selling speed presents a threat to the manipulator's gain; subsequently, it can threaten the stability of the manipulated stock and possibly that of the entire stock market. It can also serve as a regulatory target aimed at investor protection, market stability, and, to some extent, crisis prevention. The paper on regulating price-lifting will address this issue.

7.2 Need of antitrust regulations against large concentrations of stock

[20] There is a little concern about action-based manipulation at this stage - at least based on the SEC litigation cases displayed in the tables in Section 3. The existing disclosure requirements in the US seem to have basically taken care of it. However, some minor modifications may still be necessary.

Behind each A-L-D scheme, the manipulator strives to obtain the power of price-fixing through large concentrations of stock purchases. This is very similar to the monopolistic behavior in the goods market. Evidence shows that a firm's profit is strongly and positively associated with its market share in the goods market (Viscusi, *et al.* (1995)). We have demonstrated in this paper that theoretical research and enforcement cases have firmly established that large investors have the ability to obtain monopolistic power as well as unfair profit through large concentration of shares. Antitrust legislature was initiated for the U. S. goods market in 1890. [21] We need to equally draft and enact antitrust regulations for the stock market manipulation as well.

To carry out antitrust regulations against A-L-D manipulators, four areas can be targeted based on the analysis presented in this section. They are large concentration of share holdings, trade-based price-lifting, touting stocks on media platforms, and fast selling speed. We target only those manipulation schemes that involve large concentrations of shares.

8. **Existing approach and our proposal to regulate market manipulation**

[21] The first antitrust legal framework in the world emerged in the United States in the post-Civil War era, Initiated by The Sherman Act of 1890. Section 1 of the Act prohibits mergers that would tend to create a monopoly or undue market dominance. It also prohibits price-fixing arrangements. Section 2 applies to firms that already dominate their market, and provides the right and the ways to reduce the monopoly power of the firm, usually by slicing up some part of the company, or demanding divestiture. With the addition of the Clayton Act and the Federal Trade Commission Acts, both passed in 1914, these three laws comprised the substantive framework for US antitrust policy (Viscusi, *et al.* (1995)).The Hart-Scott-Rodino Act of 1976 completes the basic arsenal of antitrust statutes.

Stock market manipulation is chronic, frequent and occasionally rampant. How does the existing regulation deal with manipulation? What are its strengths and weaknesses? How effective are the regulatory procedures already in place? These questions need to be answered before detailing our proposals.

The legal framework underpinned by SA (1933) and SEA (1934) has presented guidelines on regulating market manipulation. The current approach by enforcement agencies focuses on the manipulator. Since the conditions governing whether a manipulator can be convicted are very strict, manipulation as crime is virtually un-prosecutable under current legislature (Fisher and Ross (1991), Markham (1991)). This can be seen in the very few instances in which someone accused of stock market manipulation is actually convicted relative to the number of investor complaints registered each year with international stock markets. Appendix III shows, partially, low effectiveness and efficiency in the enforcement outcomes in both SEC and JSESC investigations. The legal approach is necessary when rampant manipulation brings about serious financial and societal consequences. In these instances, manipulation is prosecuted as a criminal case and only legal resolution is considered appropriate.

Market manipulation is a daily phenomenon affecting stocks and related derivatives traded at any global stock market. Most daily manipulations are not rampant. Rather, many manipulation schemes cause a certain degree of price volatility but do not result in market-wide panic or crashes. Targeting the manipulators behind those schemes through the legal framework is financially costly and time consuming. Often cases go on for

years before being resolved. The probability of winning a case against a manipulator remains low in the end (Markham (1991)). It is not surprising that Fishel and Ross (1991) question if the legal approach is the most expeditious avenue to prosecute cases that did not result in untold damage. In brief, the existing approach, being *ex post* and time consuming, cannot effectively fulfill, efficiently and at a low cost, the daily tasks of investor protection, crisis prevention and promotion of market stability.

Therefore, for chronic and frequent but not rampant acts of manipulation, the regulatory measures proposed in this paper are limited to being quantifiable, adjustable, inexpensive and workable at a day-to-day operational level. The existing legal prosecution approach should remain, but most likely the frequency to resort to legal enforcement will be markedly reduced, if our recommendations are implemented. With both regulatory and legal measures, the goal of investor protection, crisis prevention and market stability will come closer to becoming a reality.

9. Regulatory proposal: a generic recommendation

Since each stock market has its own unique regulatory emphasis and cultural characteristics, we will only provide a set of examples as a generic recommendation. These suggestions reflect the principles inherent in antitrust law but also take into consideration the need to address both long and short time horizons. The specific proposals for a particular stock market need, however, to be determined after careful analysis of the trading data generated by the market.

The A-L-D manipulation schemes can take days, weeks or months, sometimes over a year to complete. Therefore, time lengths have to be considered in designing regulatory measures. Different limits on share holdings should be set for different time lengths. [22]

1. Throughout the lifetime of a stock, a financial investor cannot, at any time, hold or borrow more than 25 percent of the outstanding shares of any stock.
2. During any calendar year, an investor is allowed to increase or decrease his holding in a stock a maximum of 5 percent of the outstanding shares.
3. During each trading day, any investor's total orders, executed or unexecuted, added in absolute values, are not allowed to exceed 5 percent of the average daily volume of the previous month. [23]

To prevent circumvention, three more measures have to be in place. One is that large positions near the proposed limits must be monitored for their future changes. Another is that collusion needs to be effectively prevented. The third is that multiple accounts set up by one investor for one stock have to be well curbed. More in-depth analysis and measure construction will be given in the next paper on regulating price-lifting.

10. Benefits of regulating concentration

[22] Easterbrook (1986) reports that position limits are applied in the futures markets in the United States.
[23] These proposals have multiple effects. Firstly, they prevent dominance. Secondly, they substantially prevent, if not eliminate, self-dealing in the form of wash sales, matched orders or fake trading. Thirdly, they curb short-term manipulation tricks such as marking-the-close. They also prevent large-scale short-selling.

Monopolistic concentration lies at the foundation of A-L-D schemes and many other long or short manipulations. Limiting concentration to a sufficiently small amount makes it impossible for any investor singlehandedly to affect the stock's liquidity substantially. In addition, regulation over concentration of share holdings would provide several other immediate benefits to the market.

1. Perfect competition, with all of its desirable features can become a reality in the secondary markets. No investor, individual or institution, is too large to set the price artificially, based on his position, or disrupt the normal mechanisms of the market. Therefore, antitrust regulation would actually be able to increase its effect more broadly than before. [24]

2. In addition to perfect competition, stock trading becomes more equitable and transparent for every investor. This is the most fundamental protection of investors, particularly small investors. It is one of the key measures needed to prevent stock market crises.

3. Limiting concentration to a small percentage of outstanding shares renders the lift stage uncertain though not completely irrelevant. This is because liquidity is well guarded from manipulation. Thus one source of artificially created price volatility can be eliminated. The stability of the stock market in this aspect would be vastly improved.

[24] There is a manipulation tactic, advancing the bid, which is seen in several prosecution cases released by HKSFC and SEBI (see Tables 1.3-4). It is not based on absolute trade size. This tactic is an important destructive force to perfect competition. How to resist this tactic effectively will be treated in the paper on regulation of price-lifting.

4. Limiting concentration makes the distribution stage different from the scenario of a large concentration. No investor can profit substantially at other investors' painful losses. That is, no investor has absolute advantage over other investors. Even if panic strikes one or numerous investors, due to the small positions now taken, the aggregate impact on a drop in prices would be substantially limited. Therefore, in this regard, crisis prevention and stability improvement would be fundamentally improved. [25]

5. Heavy selling pressure due to large concentrations of sell shares would be basically eliminated. Together with regulation of price-lifting and price-depressing, which will be fully explored in a separate paper, bear raids would not be possible.

6. Profitable long-term investments would be extensively protected and the encouragement of long-term investing carried out. The safety of nearly all investors and most listing companies would be vastly improved. The ecology of the stock market would also become more natural and sustainable for both capital-raising and honest investment.

7. To regulators, the most important consideration is that quantifiable, adjustable and inexpensive measures are effected that enable daily operation with certainty. Particularly, such measures are meant to avoid expensive legal battles that can continue for years without resolution. It is our aim to increase regulatory effectiveness and efficiency.

[25] Unintentionally coordinated market-wide selling is beyond concentration regulation. In this rare scenario, even though every volume would be small, simultaneous selling by a large number of small investors can create major damage to the market as well as large investors. Therefore, a separate paper will address this issue with careful analysis and propose effective regulation.

8. A host of other socioeconomic benefits could accrue. For instance, peace of mind of stock investors can be made sustainable. Economic data in the areas related to the stock market are less volatile and more honest. Therefore, economic growth in this regard becomes more predictable from both a short-term and a long-term perspective.

11. Concluding remarks and future research

Regulating large concentration of share holdings, in addition to other regulatory measures to be proposed, will afford investors a more perfected competition that strives for fairness and transparency. It will significantly improve protection of investors, particularly small investors in addition to existing disclosure-oriented regulations. It will greatly enhance stock market stability by reducing artificial price volatility and maintenance of constant liquidity. It will bolster investors' confidence and prevent market-wide crises by reducing the price impact of each position.

Regulating concentration can be considered as a key element of the antitrust measures that aid the stock market's drive to prevent monopolistic manipulation. It would be the first important constructive step to building perfect competition by ensuring increased fairness and transparency.

The next article presents another important step toward building perfect competition with fairness and transparency in the stock market, and is entitled *"Preventing Stock Market Crises (II): Regulating Trade-Based Price-Lifting."* (Yan *et al*. (2010b))

As follow-up research, one can analyze other financial markets such as futures markets, employing the methodologies developed in the current paper. Another possible extension is to study if the current proposals can be utilized as building blocks to be added to the future global financial architecture.

Appendix I

Prosecution cases against stock market manipulation selected from the stock market regulatory agencies of the US, China, India, Hong Kong and Japan

From the Web sites of five securities regulatory agencies, including China (CSRC) and its city of Hong Kong (HKSFC), India (SEBI), Japan (JSESC) and the United States (SEC), we collected 140 cases being prosecuted for market manipulation between 1998 and 2008. They are presented in Table 1.1 through Table 1.4 except for JSESC cases.

We have noted that among the 140 cases, the 19 CSRC cases are all trade-based market manipulation with concentration data explicitly stated. The majority of the 30 cases taken from SEBI similarly indicate usage of mainly trade-based strategies of manipulation such as wash sales, matched orders and advancing-the-bid, techniques used by manipulators during the price-lifting stage. The 38 HKSFC cases are brief and most evidence trade-based manipulation tactics such as marking-the-close, matched orders and advancing-the-bid. The 25 JSESC cases indicate that they are market manipulations with the majority also being trade based. The 28 SEC litigations include 19 cases of market manipulation based on information only and 9 cases involving trade-based manipulation tactics. The following will briefly explain the selection criteria when choosing which enforcement cases to include from each regulating body.

1. China Securities Regulatory Commission (CSRC)

From April 17, 2006 to June 18, 2009, CSRC issued 13 orders to prohibit the market entry of several investors or institutions because of trade-based market manipulation practices. (http://www.csrc.gov.cn/n575458/n776436/n3376288/n3376382/n3418750/index.html). One order cited 7 cases of manipulation. Altogether there are 19 cases of market manipulation, listed in Table 1.2 in Section 3.

The 19 cases occurred between January 4, 2000 and July 20, 2006. Each case contains single or repeated manipulation schemes for multiple years, ranging from more than one year to more than five years. A large concentration (from 32% to 90% of tradable shares) and wash sales or matched orders were resorted to in each of these cases. The 19 cases all involve violation of Section 77 (formerly Section 71) of the Securities Act (2005), for the Prohibition of Securities Market Manipulation. At present, all of these cases have been closed and the manipulators disciplined, including being banned from stock market entry for time spans ranging from one year to life.

2. Hong Kong Securities and Futures Commission (HKSFC)

We selected 38 prosecuted market manipulation cases that occurred between January 1, 1998 and December 31, 2007 at the Hong Kong Stock Exchange. Market manipulation is explicitly written in the title or text of each case. The selection is made from the

enforcement news issued by the Hong Kong Securities and Futures Commission (http://www.sfc.hk/sfcPressRelease/EN/sfcEnforceNewsServlet). The 38 cases are listed in Table 1.3 in Section 3.

Most cases feature matched orders and/or wash sales. Sixteen cases involved marking-the-close. Four cases involved advancing-the-bid and another two fake trading. Each of these illegal tactics is used to lift share prices in long- manipulation schemes. No concentration data are available in any of the 38 cases, which prevent us from categorizing the manipulation schemes.

3. Securities and Exchange Board of India (SEBI)

Thirty prosecution cases have been selected from the Web page of SEBI press releases. (http://www.sebi.gov.in/Index.jsp?contentDisp=SubSection&sec_id=1&sub_sec_id=1)

Selection criteria:

(1) All 30 cases were selected from the orders listed in 2009 press releases. These cases actually occurred, however, from 1999 through 2005. They are listed in Table 1.4 in Section 3.

(2) At the least, Regulation 4 (1995 / 2003), Prohibition against Market Manipulation, was violated. Other violations may or may not be listed in the orders.

(3) The selection is not exhaustive or exclusive but only presented to demonstrate the

widespread existence of these cases. Nearly all the cases (28) include matched orders and/or wash sales. Two cases involved the manipulation tactic of advancing-the-bid *per se*. One involved market cornering. Those tactics are employed to lift share prices in long manipulation schemes. Like the HKSFC cases, no concentration data are available in any of the 30 orders, which prevent further ability to categorize.

4. Japan Securities and Exchange Surveillance Commission (JSESC)

From July 1, 1998 to June 30, 2008, 25 investigated cases in market manipulation based on investors' complaints were filed for prosecution by the JSESC. Those cases were found in violation of Article 159, the Prohibition of Market Manipulative Acts, of the Financial Instruments and Exchange Act (2007). They are all listed in the JSESC Annual Reports (http://www.fsa.go.jp/sesc/english/reports/reports.htm). Since no case reveals the name(s) of the manipulator(s) and there is a lack of consistency in data presented in all the cases, we cannot develop a meaningful table from these data. Rather, the reader is referred to Appendix III for Table A3.2 to see the ratio of investigated cases to the total number of complaints made by investors.

5. Securities and Exchange Commission of the United States (SEC)

Twenty-eight cases involving litigation have been selected from *SELECT SEC AND MARKET DATA FISCAL 2008* (http://www.sec.gov/about/secstats2008.pdf). They are listed in Table 1.1 in Section 3. All manipulations occurred from 2001 to 2008. The

10(b)-5 rule of SEA (1934) was violated among other violations cited in each case under litigation. Most cases included issuing false and misleading press releases, *i.e.*, and, as such, should be categorized as information-based market manipulation. A few are purely trade based, evidencing such manipulation tactics as matched orders or marking the close.

There are a couple of findings from the 140 cases displayed by each of the five global regulating agencies.

1. Each regulating agency emphasizes certain aspects of market manipulation. But none examines the full spectrum of the listed manipulation schemes. Complete pictures of all the cases citing stock market manipulation are still not available. This lack of access evidences the necessity for further exchange and cooperation among global regulators. It also reveals the need to involve economic researchers in determining what data to collect to better understand and prevent market manipulation.

2. Both heavy lifting volume due to fictitious or fake trades and unreasonably high bidding prices over the last traded price are key elements in causing substantial increases in prices in a short period of time There is no linear relationship between the rise in prices with either trading volumes or bid sizes,

Appendix II

Number of stock market cycles with significant losses

In Brazil, Hong Kong and the US (1987-2008)

We define a stock market cycle with significant losses as one with consecutive trading days with at least a 5% total loss – that is, every day of the cycle the market index lost value, and it totaled at least 5%. The loss is calculated as the difference between the closing price of the last day subtracted from the closing price prior to the first day, divided by the later. We count the number of cycles with at least 5% and at least 10% losses. Long market manipulation usually results in a severe drop in the stock price once the manipulation is over, and the price no longer has any artificial support. Therefore, the frequency and severity of the consecutive day's losses might provide an indication of the existence and frequency of severe market manipulation.

Table A2.1 Number of stock market cycles with significant losses per year, in Brazil (BSVP), Hong Kong (HSI) and the United States (DJI) (1987-2008)

Year	BSVP	HSI	DJI
1987	23	5	5
1988	13	2	1
1989	16	3	1
1990	22	3	2
1991	23	2	0
1992	28	3	0
1993	9	3	0
1994	16	11	1
1995	19	3	0
1996	5	1	0
1997	12	11	1
1998	17	20	4
1999	7	4	1
2000	12	11	4
2001	15	11	3
2002	14	5	7
2003	3	1	0
2004	8	2	0
2005	6	1	0
2006	8	0	0
2007	7	6	1
2008	25	20	10
Total (> 5%)	308	128	41
Total (> 10%)	91	29	6

Appendix III

Effectiveness and efficiency of existing regulations against market manipulation

Table A3.1 Ratio of SEC litigation cases to total complaints regarding market manipulation (2005 through 2008)

Fiscal Year *	Total number of complaints	Complaints citing market manipulation	Total prosecutions ** (% of total complaints)	Prosecutions in market manipulation (% of complaints citing market manipulation)
2005	76,221	741	630 (0.8%)	46 (6%)
2006	77,274	953	574 (0.7%)	27 (3%)
2007	77,174	899	656 (0.9%)	36 (4%)
2008	80,788	910	671 (1.1%)	52 (6%)

* Fiscal year 2008 is from October 1, 2007 to September 30, 2008.

** Prosecution cases include civil actions and administrative proceedings.

Table A3.2 Ratio of JSESC cases filed for prosecution to total complaints citing market manipulation (July 1, 1998 – June 30, 2008)

Business Year *	Total complaints	Trade- based market manipulation complaints	Suspected cases	Cases filed for prosecution (%)
1998	241	51	104	1 (2%)
1999	789	162	78	3 (2%)
2000	1,356	317	62	4 (1%)
2001	2,181	601	112	5 (1%)
2002	3,056	759	147	0 (0%)
2003	3,217	680	154	2 (0.3%)
2004	4,669	1,435	153	2 (0.1%)
2005	7,526	2,705	169	1 (0.03%)
2006	5,021	2,678	141	3 (0.1%)
2007	5,841	2,126	141	4 (0.2%)
Total	33,897	11,514	1,261	25 (0.2%)

* Business year begins on July 1 and ends on the June 30 of the following year.

The ratio of prosecutions for market manipulation to the complaints regarding market manipulation has thus far never exceeded 7% in any SEC fiscal year (2005-2008). Apparently this ratio is low. The JSESC seems to have an even lower rate. Out of 11,514 public tips stating market manipulation, which were mainly trade based, only 25 were found through investigation and filed for prosecution during the ten year span from July 1, 1998 to June 30, 2008. That is a mere 0.2%. And, the rate of conviction can be even lower. One can develop a sense of how poor effectiveness and low efficiency regarding securities legislature and enforcement procedures can be This is mainly because many non-rampant daily manipulations are difficult to detect and even harder to prosecute if

pursued through legal procedural channels.

German securities regulator is said to be toothless. And the country's weak rules lead to few market manipulation convictions. For instance, 1,300 tips in 2008 ended up with 11 cases convicted, or a conviction rate of 0.8% (ANE (2009)). There were 6,000 complaints in year 2000 about manipulation in Canadian stock markets. How many of them were investigated? The convicted manipulator Marino Specogna questioned (Specogna (2003)).

In emerging stock markets, Goyal (2005) points out that it takes up to two years to settle a SEBI case in India, and the conviction rate is poor. In 2001-2002, 21 out of 111 cases were completed; the completion rate was 19%. The conviction rate is likely lower. Nageshwaran and Krithivasan (2004) argue that only 16 convictions were handed down out of total of 775 litigation cases in Malaysia in 2002. The conviction rate based on litigation is only 2%. Those low conviction rates from the regulating agencies of both developed and emerging economies obviously justify non-legal measures for daily regulatory operations.

Other indicators such as how many years does it take to progress from complaint to conviction, what is the cost to cover all legal procedures, and how many human resources are involved in each case can be further calculated to measure the effectiveness and efficiency of the legal approach. We leave this work for future research.

Appendix IV

Types of manipulative conduct (IOSCO (2000), p. 5)

"Types of manipulative conduct may be categorized according to the methods used, the objectives of the underlying activity, and the parties involved.

A. Methods

A number of the methods used include:

• Engaging in a series of transactions that are reported on a public display facility to give the impression of activity or price movement in a security (painting the tape);

• Improper transactions in which there is no genuine change in actual ownership of the security or derivative contract (wash sales);

• Transactions where both buy and sell orders are entered at the same time, with the same price and quantity by different but colluding parties (improper matched orders);

• Increasing the bid for a security or derivative to increase its price (advancing the bid);

• Buying activity at increasingly higher prices. Securities are sold in the market (often to retail customers) at the higher prices (pumping and dumping);

• Buying or selling securities or derivatives' contracts at the close of the market in an effort to alter the closing price of the security or derivatives contract (marking the close);

• Securing such control of the bid or demand-side of both the derivative and the underlying asset that leads to a dominant position. This position can be exploited to manipulate the price of the derivative and/or the asset (corner).

As regards derivatives, in a corner, a market participant or group of participants accumulates a controlling position in an asset in the cash, derivative and other markets. The market participant or group of participants then requires those holding short positions to settle their obligations under the terms of their contracts, either by making delivery or by purchasing the asset from the manipulator, or by offsetting in the derivatives market opposite the manipulator at prices distorted by the manipulator;

• Taking advantage of a shortage in an asset by controlling the demand-side and exploiting market congestion during such shortages in such a way as to create artificial prices (squeeze); and

• Dissemination of false or misleading market information through media, including the Internet, or by any other means. The dissemination is done in order to move the price of a security, a derivative contract, or the underlying asset in a direction that is favorable to the position held or a transaction planned by the person disseminating the information."

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