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8 Naked Open-Market Manipulation and Its Effects

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Abstract

More than 80 years after US federal law first addressed stock market manipulation, there is still dispute about manipulation law’s foundational principles; this chapter aims to provide clarity by offering an analytical framework for understanding a specific manipulation. There has been a sharp split among the federal circuits concerning manipulation law’s central question: Can trading activity alone ever be considered illegal manipulation? Economists and legal scholars do not agree on whether manipulation is possible in principle, let alone on how to address it properly in practice. The framework offered by this chapter aims to help clarify federal law and may guide regulators in successfully prosecuting financial law’s most intractable wrong. We draw on the tools of microstructure economics and the theory of the firm to provide an analysis of a particular form of manipulation, identify who is harmed by it, and evaluate the social welfare effects.

Keywords: market manipulation, open-market manipulation, market regulation, algorithmic trading, fairness, market efficiency, illegal manipulation, noise trader, anti-noise trader

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8.1 Introduction

References to material in this chapter should cite the full article from which it was adapted: Fox et al. ‘Stock market manipulation’, 2018.

More than 80 years after US federal law first addressed stock market manipulation, the federal courts remain fractured by disagreement and confusion concerning manipulation law’s most foundational issues.¹ There remains, for example, a sharp split among the federal circuits concerning manipulation law’s central question: Whether trading activity alone can ever be considered illegal manipulation under federal law?
Academics have been similarly confused—economists and legal scholars cannot agree on whether manipulation is even possible in principle, let alone on how to properly address it in practice.\(^2\)

This confusion is particularly striking because preventing manipulation was a primary motivation for enacting the US’s securities laws. In the midst of the Great Depression, manipulation struck Congress and varied commentators as a principal cause of the 1929 stock market crash and the ensuing economic collapse.\(^3\) As a result, the Securities Exchange Act of 1934 (the 'Exchange Act') \(^4\) expressly prohibits manipulation in its Sections 9 and 10(b).\(^5\) The continued confusion is also striking because if one uses for comparison the rough proxy of enforcement by the US Securities and Exchange Commission (SEC), the problem of manipulation is of a similar scale to insider trading. In its statistics for the last five years, the SEC reported bringing a combined total of 237 civil and administrative enforcement actions for insider trading and 229 for market manipulation.\(^5\) Yet while there is a vast legal and economic literature addressing insider trading, efforts to analyse manipulation have been far more limited.

This chapter seeks a way out. We start with some simple constraints on a theory of manipulation and suggest that for a trading strategy to be considered manipulation prohibited by the Exchange Act, four essential questions must be answered in the affirmative. First, is the strategy, purely as a conceptual matter, distinguishable from other, clearly acceptable trading strategies, and does the strategy cause social harm? Second, does the strategy plausibly fit under the broad dictionary meaning of the term ‘manipulation’? Third, are there circumstances under which the strategy can yield positive expected profits, and do they occur frequently enough to cause concern? Fourth, are there practical procedures for implementing a ban on the strategy whereby the social gains from its reduction or elimination exceed the social costs of doing so, including deterring socially valuable transactions that might be erroneously identified as examples of the practice?\(^6\) In essence, this four-question approach begins with some minimal rules of statutory interpretation to define the outer borders of what is plausibly within the reach of the prohibitions of manipulation in Sections 9 and 10(b). It combines this with a normative analysis, based on economic efficiency and fairness, as to which of the strategies that would fit within these outer borders should actually be subject to legal sanctions.

Our focus here is on one of the three types of market manipulation that have been the subject of commentary both in the case law and by legal and economics scholars—naked open-market manipulation.\(^7\) What has often been missing in the treatments of manipulation, however, is a perspicuous identification of exactly who is harmed and who is helped if the practice is left unregulated and how this would change if the practice instead were legally prohibited. Our framework allows a comparison of the two worlds in terms of economic efficiency and the fairness of the various market participants’ resulting wealth positions. We then use that analysis to derive an approach that can enable regulators to deter genuinely socially undesirable activity without unnecessarily deterring similar-appearing, but socially useful, trades. Indeed, while objections to manipulation are often framed in terms of its unfairness, we argue that manipulation is undesirable on straightforward efficiency grounds.

The framework we develop draws on normative and analytical building blocks of microstructure and financial economics. Normatively, we argue that the main social functions of trading markets relate to guiding the efficient allocation of capital among firms and between households and enterprise over time, with the liquidity and price accuracy of a market serving as useful proxies for these ultimate social functions. Analytically, we present an informal model of how the secondary equity market typically functions.

With these foundations in hand, we show that open-market manipulation will typically harm both of a market’s central social functions—facilitating liquidity and enhancing price accuracy. Although most commentary focuses on the impact of manipulation on price accuracy, the harm to liquidity can be more important. Whether there is harm to price accuracy as well turns on when the manipulation is corrected by
an event (say, a corporate disclosure) that causes a stock’s price to revert to its accurate level after a successful manipulation distorted it. Surprisingly, our analysis reveals that the core harm of a manipulation will actually depend on the speed and nature of such price ‘correction’. If a correction usually occurs rapidly, then the harm of manipulation due to its effects on price accuracy will typically be trivial. The manipulation’s focal harm will be to liquidity. If, on the other hand, a manipulation’s effects on price are corrected only slowly, then the harm due to its effects on price accuracy will be significant as well. We discuss conceptually the various possibilities for how correction can occur.

The remainder of this study proceeds as follows. Section 8.2 provides an overview of the forms of manipulation we will analyse. Section 8.3 establishes our normative framework for assessing whether a potentially manipulative trading strategy is actually socially undesirable and whether the social benefits of prohibiting the strategy outweigh the costs. There we identify the ways in which manipulation and its regulation can affect the efficiency with which the economy operates. We also explain how we evaluate the fairness of a given practice. Section 8.4 briefly explores the basic institutional and economic features of the stock market to provide the tools necessary for understanding complex trading strategies. Section 8.5 considers naked open-market manipulation. We then conclude.

8.2 Overview

8.2.1 Naked Open-Market Manipulation

Naked open-market manipulation involves the purchase of a number of shares, with an upward push on prices, and then their resale under circumstances where the corresponding downward push on prices is less severe, thereby resulting in the average sale price exceeding the average purchase price. This strategy yields positive expected profits where, at the time of the purchase, the likelihood of profit from this asymmetric price reaction is sufficiently great to make up for the costs of the trading involved.

As will be developed below, we believe that this asymmetric-price-reaction condition for positive expected profits is met under certain circumstances, but that such circumstances arise relatively infrequently. As a result, we ultimately conclude that such a trader should be subject to legal sanctions, but only where it can be proved that she had, at the time of her purchase, good reason to believe that this condition was met. Imposing sanctions without requiring such proof is likely to deter socially useful purchases followed by sales that look very much the same to an external observer. The most important example is simply fundamental-value informed trading, where a trader buys a stock, based on analysis enabling a more accurate appraisal of its value than is reflected in the then-current price, and resells when the market price catches up with her appraisal.
8.2.2 The Extent and Nature of Manipulation

The fact is that we know relatively little about the extent of manipulation in the equity markets. Of course, we can count the number of manipulation actions by the SEC, and a couple of papers have done so. Aggarwal and Wu combed the SEC’s litigation releases for those announcing the filing of a complaint from 1990 to 2001, identifying 142 cases. Most of the cases involve small illiquid securities and almost half of the sample traded on over-the-counter venues. Prosecuted manipulation cases are relatively rare on the established exchanges. An interesting feature of the cases is that among the cases 48 per cent had an insider defendant, 32 per cent had a large (> 5 per cent) shareholder defendant, and 64 per cent had a broker defendant (obviously, at least some cases involved multiple defendants). The paper also shows that any one manipulation can combine pure trade-related strategies with the propagation of rumour, false news, and broker encouragement. Near the end of Section 8.5 we will provide further evidence of manipulations and plausible examples of when manipulation might be profitable.

8.3 Overview

Assessing the social value of a trading strategy and the desirability of prohibiting it by deeming it illegal manipulation requires reference to the basic functions served by the equity trading market. It also requires recognition that if a particular form of trading takes place and its extent is generally understood, other actors in the system will generally take these facts into account in determining their own actions. Thus, the normative question is how the existence of a form of trading and any attempts to regulate it affect the system’s ultimate capacity to further the multiple social goals that equity trading markets are expected to serve and that form the justificatory basis for regulation when these markets fall short.

8.3.1 Social Goals

Five basic social goals animate most discussion of secondary equity markets and their regulation: (1) promoting the efficient allocation of capital so that it goes to the most promising new investment projects; (2) promoting the efficient operation of the economy’s existing productive capacity; (3) promoting the efficient allocation of resources between current and future periods so as to best satisfy the needs of firms seeking funds for real investments (trading the promise of future dollars to obtain current dollars) and the needs of savers seeking to forgo current consumption in order to enjoy future consumption (trading current dollars to obtain the promise of future dollars); (4) promoting the efficient allocation among investors of the risks associated with holding securities so that their volatility is borne by risk-averse investors with the least disutility; and (5) operating fairly and fostering an overall sense of fairness. In addition, any intelligent discussion of the desirability of manipulation and its regulation must take into account the impact of the trading on the real resources that society devotes to trading in, and operating, the stock market, and to the enforcement and compliance costs associated with its regulation, including the socially useful transactions that any regulation may deter.
8.3.2 The Use of Ex Post and Ex Ante Analysis

The impact of an ongoing trading practice on these five basic social goals is most easily understood by starting with a single instance of the practice and seeing the ex post effect of the transaction. From this, we can see the impact of the trade on the wealth position of the various participants involved, which in turn is a guide to the incentives that the availability of the practice generates. Then we can consider, from an ex ante perspective, the impact of the practice as a generally-known ongoing phenomenon occurring over the long run within a competitive environment. This ex ante analysis allows us to see what the efficiency and fairness implications of the practice are. As is relatively standard in the law and economics literature concerning corporate and securities law, we evaluate efficiency in Kaldor–Hicks terms, and consider fairness in terms of a practice’s effects on various participants’ wealth positions from the ex ante perspective.\(^\text{16}\)

The initial four basic values and cost considerations listed above, and even the ‘sense of fairness’ that we mention with respect to the fifth, all go to the efficiency aspect of the problem. The ‘operating fairly’ aspect of the fifth value goes to the ultimate underlying fairness. Conceptions of fairness are too many and too multifarious to address generally in depth. However, fairness also plays too prominent a role in public criticism of the securities markets to be entirely ignored. Our strategy here is simply to take as an exemplar one prominent conception of fairness that frequently appears in commentary on markets.\(^\text{17}\) We argue that this conception of fairness is of limited use in assessing trading behaviour and leave things at that. More generally, we think that many of the concerns that the quest for fairness targets, while genuine, can be more perspicuously articulated within an efficiency framework. The choice of the ex ante perspective to assess underlying fairness implies that if a practice does not affect a market participant’s expected outcomes, it is not unfair. Because the practice is available and another person engages in it, a given transaction entered into by the participant may leave her worse off. But the practice is not unfair to the participant if, on average, she is not worse off entering into such transactions due to the practice. The idea that fairness can be assessed in terms of expected outcomes is bolstered by the fact that most investors engage in many transactions over time, and, like the myriad other risks that investors undertake, the risk of being hurt by the practice can essentially be eliminated by holding a diversified portfolio. To the extent that any of the assumptions in this characterization—repeated transactions or diversification—turn out not to characterize a given trader, then our argument above will not apply.\(^\text{18}\) This approach to fairness may also have far less appeal in other arenas of social life. We will see that the kind of manipulation that we examine does not have unfair effects from this ex ante perspective.

8.3.3 Market Characteristics that Impact on These Goals

A given form of trading may impact these five social goals in complex ways that are related to a stock market’s two most important characteristics: the price accuracy and the liquidity of the stocks trading in it.\(^\text{19}\) The social impact of any given form of trading is most easily evaluated through a two-step process: first assessing the effect of the type of trading on each of these two market characteristics and then identifying the effect of the characteristic on the five basic social goals discussed above.
## 8.3.3.1 Price Accuracy

Price accuracy relates to the accuracy with which the market price of an issuer’s shares predicts the issuer’s future cash flows. Because the price of any new share offering by a publicly traded issuer will be determined largely by the price of its already outstanding shares in the stock market, more accurate stock market prices will lead to capital raised by new share issuances being more likely to go to the issuers with the most promising new real investment projects, the first such basic social goal. Share price also influences the availability of new project funding from other outside sources and the willingness of managers to use internal funds for investment, and so greater price accuracy assists the efficient allocation of capital in these other ways as well.

More generally, more accurate share prices help reveal managers who are performing poorly both in terms of their deployment of internal funds for new investment projects (again assisting the efficient allocation of capital) and in terms of their management of the issuer’s current assets (assisting the efficient operation of the economy’s existing productive capacity, the second basic social goal). They also improve the effectiveness of share price compensation schemes, the threats of hostile takeovers, and activist hedge fund pressures as incentives for better managerial decision-making in terms of promoting these first two basic social goals.

Over time, more accurate share prices also likely lead to a greater sense of fairness on the part of investors, part of the fifth basic social goal, because they will experience fewer negative surprises at some point in time after their purchase or sale.

## 8.3.3.2 Liquidity

A second characteristic is how liquid the market is. Liquidity is a multi-dimensional concept that relates to the size of a trade, the price at which it is accomplished, and the time it takes to accomplish the trade. Generally, the larger the size of the purchase or sale and the faster one wishes to accomplish it, the less desirable will be the price. The more liquid the market is, however, the less severe these tradeoffs are. For a small retail purchase or sale of stock, the ‘bid-ask spread’ (the spread between the best available bid and best available offer in the market) is a good measure of liquidity because the trader can effect a buy or sell transaction immediately at those respective prices and, in essence, will be paying half the spread to do so. For larger orders, the volume of stock available at prices not too inferior to this best bid or offer (the ‘depth of the book’) is relevant as well.

Liquidity also has an impact on a number of social goals, as follows.

### a. More Efficient Allocation of Resources Over Time

To start, the prospect of greater liquidity promotes more efficient allocation of society’s scarce resources between uses that support current consumption and uses that support new real investment that in turn allows greater consumption in the future. This relates to the third basic social goal, the efficient allocation of resources with regard to consumption over time. Consider this first in terms of enterprises seeking new capital to devote to real investment projects through the issuance of stock. In essence, they are purchasers of current dollars in return for the promise of future dollars. The more liquid an issuer’s shares, the more valuable their shares are to hold for any given level of expected future cash flow. Thus, when an issuer offers shares in the primary market, the more liquid that investors anticipate the shares will be in the future, the higher the price at which the issuer can sell its shares, all else equal. Hence, the lower will be the issuer’s cost of capital.
In welfare economics terms, illiquidity, just like a tax, results in a ‘wedge’ between the value of what the savers (the purchasers of future dollars) expect to receive in the future and the value of what the entrepreneurs or issuers (the suppliers of future dollars in the form of future dividend streams) expect to give up in the future. This wedge prevents certain transactions from occurring that would have occurred if the shares were expected to be more liquid. The fact that, absent this wedge, the issuer and savers would have willingly entered into these transactions means that the transactions prevented by illiquidity are ones that would have made both parties better off on an expected basis. These lost transactions are projects with expected returns that are lower than those of the marginal project that gets funded in a world with a certain degree of illiquidity, but still high enough to make some people feel that, absent liquidity concerns, sacrificing their current dollars for the projects’ promises of future ones would be a worthwhile exchange.

In essence, illiquidity harms the efficiency with which society allocates its scarce resources between uses that support current consumption and uses that support consumption in the future. Savers save less, and entrepreneurs and issuers engage in less real investment, than the levels that would be mutually more advantageous but for the savers’ concerns about the liquidity of the issuers’ shares.

**b. More Efficient Allocation of Risk**

Greater liquidity also promotes the more efficient allocation of risk, the fourth basic social goal. At any given point in time, each investor has an optimal portfolio in terms of the proportion of his total wealth that is invested in risky securities and the proportion of this risky security portfolio that should be invested in each available risky asset. An investor’s taste for safety versus risk may stay relatively steady over at least the medium run. However, almost everything else determining what portfolio is optimal for him—for example his personal circumstances, the risk-free rate of interest, the expected returns associated with each available risky asset, and the variances of the returns on each such asset and the co-variances among them—may be subject to frequent change. Thus what constitutes an optimal portfolio is likely to be always shifting. By reducing the transaction costs associated with both the purchase and sale of securities, greater liquidity allows the individual investor to cost-effectively adjust her portfolio over time to keep it closer at each moment to what at that point is optimal for her.

**c. Greater Share Price Accuracy**

More liquidity also lowers the transaction costs associated with speculative trading based on acquiring a variety of bits of publicly available information and observation of the world and analysing them to make more accurate predictions of an issuer’s cash flows, i.e. trading which creates fundamental-value information. Thus, more liquidity stimulates such activity and in the process increases share price accuracy, with the attendant benefits discussed just above in terms of more efficient capital allocation and utilization of existing productive capacity—the first two basic social goals.

### 8.4 The Workings of the Equity Market

A basic understanding of how the equity market works is a necessary starting point for determining any particular trading strategy’s impact on price accuracy and liquidity. Accordingly, this section provides a quick survey of the different types of participants; the nature of trading venues and the types of orders used on them; how liquidity is generated; and the determinants of the prices at which transactions occur. From what follows, the reader will be able to see a baseline description of how the market would work in the absence of naked open-market manipulation, and will have the tools to understand the discussion in Sections 8.5 and 8.6 concerning its impact.
8.4.1 Market Participants and Their Reasons for Trading

Traders in the market can be broken down into four categories: informed traders, uninformed traders, noise traders, and anti-noise traders. In addition, the buyers and sellers in the market include professional suppliers of liquidity.

8.4.1.1 Informed Traders

Informed traders are motivated to buy or sell based on information that allows a more accurate appraisal of the stock’s value than what its current market price implies. This information can be one of several kinds. Fundamental-value information is an estimate of the future cash flows to a shareholder discounted to present value. Such information is based on a person gathering bits of publicly available information or observations about the world and analysing what the person has learned in a sophisticated way that allows a superior assessment of these cash flows. Announcement information involves information contained in an announcement by an issuer or other institution with obvious implications as to the issuer’s future cash flows. Announcement information remains profitable only during the brief period of time between the announcement and when the information is fully reflected in price. Issuer inside information is information held within an issuer that is relevant to predicting its future cash flows but is not yet public and reflected in price. Non-issuer inside information is information relevant to predicting an issuer’s future cash flows that is held within an institution other than an issuer and is not yet public and reflected in price.

As developed below, informed trading, on the one hand, moves share price on average in the direction of greater accuracy, and, on the other hand, reduces liquidity. Thus it is necessary to net out the tradeoff between the positive social impact from improved share price accuracy and the negative social impact from decreased liquidity. We have concluded in another publication that trading on the basis of fundamental-value information is socially desirable, while trading on the basis of announcement information, issuer inside information, and non-issuer inside information (unless permitted by the non-issuer institution that generated the information) is socially undesirable.

8.4.1.2 Uninformed Traders

Uninformed traders buy and sell shares without possession of information that allows a more accurate appraisal of the stock’s value than the assessment of value of the stock implied by current market prices. A trade by an uninformed person can be motivated by one of several reasons. For example, a purchase of a share is a way of deferring until a later period the consumption in the current period that the cash the trader possesses would otherwise permit. In the later period when the purchaser wishes to consume, she sells the share. The expected return at the time of purchase will simply be the expected return on the market as a whole adjusted to reflect the risk characteristics of the particular firm’s shares. Thus neither the purchase nor the sale of the share is motivated by information not yet reflected in share price at the time of the transaction.

A purchase or sale of a share of stock may also be motivated by a change in what constitutes an investor’s optimal portfolio—the mix of securities that achieves the best tradeoff of risk for return and that best suits the investor’s tastes in terms of how risk averse she is and her particular circumstances—and thus again is not motivated by information yet to be reflected in share price at the time of the transaction. As noted in Section 8.2, facilitating trades associated with consumption deferral and portfolio risk adjustment is one of the social benefits that a well-functioning stock market can provide. The market can also be a source of entertainment for traders who do not believe they have any special information, but buy and sell because they enjoy gambling.
8.4.1.3 Noise Traders

Noise traders believe they have information not reflected in a stock’s price that permits a more accurate appraisal of an issuer’s future cash flows. What distinguishes them from fundamental-value traders is that, in fact, the information either already is reflected in price or is irrelevant to making a more accurate appraisal. To the extent that idiosyncratic beliefs drive noise traders, their buy and sell trades will tend to cancel each other out and have no effect on price. To the extent that a widespread fad or fashion drives noise traders, however, their trades will push a stock’s price in the direction suggested by the fad or fashion. Such trading would thus drive price away from being the best estimate of an issuer’s future cash flows given all publicly available information.

8.4.1.4 Anti-noise Traders

Anti-noise trading is a particular form of informed trading. A trader engaging in anti-noise trading actively searches for new information about an issuer’s future cash flows and is prepared to transact in the opposite direction when she sees prices move at a time when her search suggests there is no new information. Thus, when fad-driven noise traders push price in one direction and anti-noise traders become reasonably confident that there is no new information to justify this price move, anti-noise traders will trade in the opposite direction. Before the anti-noise traders reach this level of confidence that there is no news to justify an observed price change, time may elapse as they engage in a search to see whether there is in fact such news. So, there may be a delay in their countertrading, leaving prices for a time at unjustified levels.

Because of the synergies of engaging in fundamental-value informed trading and the information search that is the basis of anti-noise trading, the same person or entity often engages in both types of trading.

Anti-noise traders play a special role in our story about naked open-market manipulation discussed below in Section 8.5 because, as with fad-driven noise trading, the price changes caused by the manipulator are also not based on new information that would help predict an issuer’s future cash flows. Such manipulation involves a person with no belief that the current price is incorrect trading in one direction, then reversing and trading in the opposite direction, and profiting because the price reaction to the first set of trades is greater than the price reaction to the reverse trades. On the one hand, the ability of the manipulator to push price in the first direction represents a situation where the anti-noise traders did not identify in time that there was no information driving the price change. On the other hand, the price at the end of the manipulator’s trading is not back to the price that would have prevailed absent the manipulation. Anti-noise traders can be the force that ultimately brings the price back to this level as, over time, they become sufficiently confident that no new information drove the changes in price caused by the manipulator.

8.4.1.5 Professional Liquidity Suppliers

The professional supplier of liquidity in an issuer’s shares engages in both their frequent purchase and frequent sale, making a business out of standing ready to buy and sell these shares up to stated amounts at quoted prices (respectively a ‘bid’ and an ‘offer’ or ‘ask’). Today, this is typically a high frequency trader (HFT). An HFT uses high-speed communications to constantly update its information concerning transactions and the quotes of others occurring in each stock that it regularly trades and changes its own quotes accordingly, rather than using information about the issuer itself to determine these quotes. Thus the professional liquidity supplier is not ‘informed’ in the sense that we use the term here. Indeed, because of its unique intermediary market-making role, unlike all other buyers and sellers of securities in the market, we will not refer to it as a ‘trader’.
8.4.2 Trading Venues and Orders

Any given stock is potentially traded in each of a number of competing venues. Almost all these venues are electronic limit order books, where a liquidity supplier or a trader can post, as a limit order, its firm commitment, until cancelled, to buy or sell up to a specified number of shares at a quoted price. A computer (the venue’s matching engine) matches these posted limit orders with incoming buy and sell market orders, which are orders from traders willing to trade immediately and unconditionally at whatever is the best available price in the market. HFTs, acting as professional liquidity suppliers, post a significant portion of the limit orders that are matched in this fashion and that result in executed trades. The law further requires that orders transact at the best prices displayed at any stock exchange. The lowest offer displayed at any exchange is known as the national best offer (NBO) and the highest bid displayed at any exchange is known as the national best bid (NBB).

8.4.3 The Economics of Liquidity Provision

What follows provides a baseline of how securities markets would work if there were no naked open-market manipulation. With this baseline set, the sections that follow will consider the impact of this type of trading. Throughout, we will assume that, for expository simplicity, all limit orders posted on trading venues are from HFT professional liquidity suppliers and all traders use market orders.

8.4.3.1 The Liquidity Supply Business

The professional liquidity supplier makes money if on average it sells the shares that it buys for more than the price paid. Doing so is not as easy as it might seem, even though at any one point in time the liquidity supplier’s offer is always higher than its bid. The problem begins with the fact that the stock market is largely anonymous. Thus, the person with whom a liquidity supplier transacts generally does not reveal her identity and, what, if anything, she knows. So there is always the possibility that she is an informed trader. Liquidity suppliers, as will be demonstrated immediately below, lose money on average when they transact with informed traders.

8.4.3.2 Transacting with Informed Versus Uninformed Traders

An informed trader will buy from the liquidity supplier only when her superior assessment of the stock’s value suggests that the value is above the liquidity provider’s offer. And she will sell to the liquidity supplier only when her superior assessment suggests that the value is below the liquidity provider’s bid. Thus, in transactions with an informed trader, the liquidity supplier sells at prices that the informed trader’s information suggests is below the value of the stock, and buys at prices that the informed trader’s information suggests is above the value of the stock. These transactions on average will be losing transactions for the liquidity supplier. In essence, the liquidity supplier faces a classic adverse selection situation. Fortunately for the liquidity supplier, the rest of its transactions are with uninformed traders. On average, these transactions should be profitable. The assessment of value of the stock implied by current market prices is the midpoint between the NBO and NBB. Because the uninformed trader has no private information, there is no reason to think that on average this market assessment is wrong. So when a liquidity supplier purchases from an uninformed trader at the NBB and sells to an uninformed trader at the NBO, each of these transactions on average yields an expected profit equal to half the spread between the two quotes, with the liquidity supplier on average buying for a little less than value and selling for a little more than value.
In sum, whatever the source of an informed trader’s private information, the liquidity provider will be subject to adverse selection and will on average lose money when it buys at the bid from informed sellers or sells at the offer to informed buyers. The liquidity provider can still break even, however, as long as there are enough uninformed traders willing to suffer the inevitable expected trading losses of buying at the offer and selling at the bid. There simply needs to be a large enough spread between the bid and offer that the losses accrued by transacting with informed traders are offset by the profits accrued from transacting with uninformed investors.

8.4.3.3 How Liquidity Suppliers Set Their Bids and Offers

A liquidity supplier operates in a competitive market. To survive, it must set its quotes aggressively enough to attract business, but not so aggressively that the money it makes by buying from, and selling to, uninformed traders is less than what it loses by engaging in such transactions with informed traders. Thus, in a world where a liquidity supplier rationally expects a higher level of informed trading, it will need to set its offers higher and bids lower to break even and survive in a competitive market. 38

A liquidity supplier knows that there is a certain possibility that the next marketable order that arrives to execute against one of its quotes will be from an informed trader. The liquidity supplier knows that if the next marketable order to arrive is a buy, there is a certain chance that it is motivated by positive private information and no chance it is motivated by negative private information. Similarly, if the next order to arrive is a sell, there is a certain chance that it is motivated by negative private information and no chance it is motivated by positive private information. Thus, the liquidity supplier knows that whichever kind of order arrives next, it will alter the liquidity supplier’s estimate of the stock’s value: up if the order is a buy, and down if it is a sell order. The offer and the bid are set in advance of knowing which it will be, but with the offer being contingent on the next arriving order being a buy and the bid on it being a sell. Thus, when a liquidity supplier is deciding on its offer price, it knows that an informed trader will only transact against this price if the information possessed by the informed trader is positive and thus that the arrival of a buy order will cause the liquidity supplier to revise its estimate upward. So, for a transaction with a buy order to be regret-free, the liquidity supplier must, in advance of the arrival of the order, set its offer quote, based on the information it then knows, to reflect this upward revision of estimated value that will inevitably accompany the buy order’s arrival. The same logic applies for setting the bid: to be regret-free it must reflect the downward revision that would inevitably accompany the arrival of a sell order. Once one kind of order or the other arrives, the liquidity supplier has new information and the process starts over again. Thus, in a world where the liquidity supplier rationally expects a higher level of informed trading, these upward and downward revisions will be larger and so, again, it will need its offers higher and bids lower. 39

8.4.3.4 The Pattern of Transaction Prices in the Presence of Informed Trading

This description of how liquidity suppliers set their quotes highlights an important byproduct of rational liquidity provision in a market with informed traders. Liquidity suppliers will be constantly updating valuations in response to transactions. With a sufficient number of trades, the market price will come to reflect the informed trader’s information. The behaviour of rational liquidity providers thus reflects a kind of ‘invisible hand’: simply as a result of their efforts to avoid losses to informed traders, liquidity providers are repeatedly revising their quotes so that, with time, they come to fully reflect informed traders’ information.

For example, suppose that there were one or more informed traders possessing a particular piece of positive information. During their period of trading, there would of course also be buying and selling by uninformed traders. So both marketable buy and marketable sell orders will arrive at trading venues, but there will be more buys than sells. As a result, although there will be ups and downs in the offers and bids as the
liquidity-supplier estimates of value move up and down with the arrival of each buy and sell order, the ups will predominate and the mid-point between the bid and offer will trend upward until the offer gets high enough that it equals or exceeds the informed traders’ estimate of the share’s value. Empirical evidence strongly supports the results from these adverse selection models. Analyses of intraday changes in quotes and in the prices of executed transactions consistently show that they respond to the pattern of buy and sell orders at the time.\textsuperscript{40} Simulations suggest that the adjustment in price described here often completes itself quite quickly.

### 8.5 Naked Open-Market Manipulation

Naked open-market manipulation involves the purchase of a number of shares, with its upward push on prices, and then their resale under circumstances where the corresponding downward push on prices is less severe, thereby resulting in the average sale price exceeding the average purchase price. The manipulator is not an informed trader in terms of knowing anything special about the issuer’s future cash flows. Rather, his profits come purely from the trading profits yielded by this asymmetric price response.

\begin{itemize}
\item The analysis below suggests that naked open-market manipulation is a trading strategy that gives rise to an affirmative answer to each of the four foundational questions posed at the beginning, and hence is an appropriate target of a ban under the Exchange Act. It is socially harmful in a way that makes it distinguishable as a conceptual matter from other trading strategies. It also fits under a broad dictionary meaning of the word ‘manipulation’.\textsuperscript{41} There are circumstances under which the strategy can yield positive expected profits. And there are situations where it will be provable that a trader has reason to know of the existence of these circumstances, meaning that if legal sanctions are imposed only when such a situation can be proved to have existed, not many socially valuable transactions—ones not driven by this strategy—will be deterred.
\end{itemize}

#### 8.5.1 Wealth Transfers: Fairness and Efficiency

Understanding the wealth transfer implications of naked open-market manipulation is most easily understood by starting with an example and seeing the ex post effect of the trade. Then we can consider, from an ex ante perspective, what the impact of the practice is as a generally known ongoing phenomenon occurring over the longer run within a competitive environment. From this, we can make conclusions both about the efficiency implications of the practice in terms of liquidity and share price accuracy and the fairness of its impact on different members of society.

#### 8.5.1.1 Ex Post Perspective

Mani is a skilled manipulator who wishes to manipulate the price of NetSuite’s stock by taking advantage of his rational assessment that it is probable that there will be an asymmetric price reaction to his purchases versus his later sales. For simplicity, assume that during the period of Mani’s purchases and subsequent sales, although liquidity suppliers are unsure of whether there is any new information that has emerged or been developed about NetSuite, in fact none has. So Mani’s trading is the exclusive cause of the initial upward trend and the following downward trend in NetSuite prices.
a. The Actual Manipulation

Mani uses a large number of market orders, averaging 5000 shares per hour, to purchase 10,000 NetSuite shares over two hours. Prior to Mani’s purchases, the national best bid (NBB) for NetSuite was $10.00 and the national best offer (NBO) was $10.10. The order flow arriving at trading venues from uninformed traders during this period involves an essentially even number of buys and sells because neither new information nor price changes motivate their trades. Thus Mani’s buy orders will leave liquidity suppliers facing each hour an excess of 5000 buy orders over sell orders. Because the liquidity suppliers fear that the excess might be due to informed trading based on positive information, assume that each 5000 shares of excess buy orders pushes their bids and offers up by $0.10. Therefore at the end two hours, NetSuite’s NBB is $11.00 and its NBO $11.10. Had Mani not traded, NetSuite’s NBB and NBO would have remained roughly at $10.00 and $10.10.

Mani now turns around and begins to sell his inventory of 10,000 NetSuite shares, this time selling 5000 shares per hour for two hours. This means that liquidity suppliers now face each hour an order imbalance of 5000 more shares sold than bought. Mani’s expectation that the price response will be asymmetric proves correct: each 1000 shares of excess buy orders pushes their bids and offers down by only $0.25. Thus, at the end of his ten days of selling, the NBB and NBO are, respectively, $10.50 and $10.60.

Buying at the offer as the NBO rises, Mani accumulates 10,000 NetSuite shares for an average price of $10.55. Selling at the bid as the NBB falls, Mani sells these 10,000 shares at an average price of $10.75. Mani thus achieves a profit of 10,000 × $0.20 = $2000.

The distributive question is who has benefited from these trades and who has been harmed. Because secondary market trading in pursuit of profits is a zero-sum game, gains and losses by different market participants are mirror images of each other and must sum to zero. In the example, Mani makes profits of $2000. The liquidity suppliers, who sold him his shares for an average of $10.55 and repurchased them for an average of $10.75, have suffered a corresponding loss of $2000. In aggregate, uninformed traders experience the change in stock price as a wash, with sellers being better off than if Mani had not traded and buyers being reciprocally worse off.

b. The Price Correction After the Manipulation

Even though the liquidity suppliers are back in balance, having purchased from Mani as many shares as they originally sold to him, this is not the end of the story. When Mani finishes his sequence of trades, the NBB and NBO are, respectively, $10.50 and $10.60, not down to $10.00 and $10.10, the prices that would have prevailed absent the manipulation. To be successful, the open–market manipulator has caused the stock price to deviate from what represented the market consensus of its value. The dynamics of when, if ever, the stock price’s distortion is ‘corrected’, with the manipulation’s impact having been eliminated, are crucially important to the welfare effects of manipulation. We see four plausible possibilities: three different ways in which the price can be corrected, and then the stark possibility that correction never occurs.

The first two possibilities involve the price going back down to $10.00/$10.10, both of which involve further losses to the liquidity suppliers. One way is that NetSuite credibly announces that there is no undisclosed information within its possession that could explain the rise to $11.00/$11.10 and then the fall (partway) back to $10.50/$10.60. It would then be clear to the market that there was no reason the price should not be back at $10.00/$10.10. Announcement traders would be briefly able to profit at the expense of liquidity suppliers as the price quickly adjusted down to $10.00/$10.10.

Absent such an announcement, a second way that the price could adjust back to its original level is through the action of anti-noise traders. This may take considerably longer and involve considerably larger additional losses to the liquidity suppliers. The searches of the anti-noise traders to see whether there was
new information justifying the price changes took too much time for them to have had the confidence to engage in trades that would have counteracted the price increases caused by Mani’s purchases or accentuated the price decreases caused by Mani’s sales. Eventually, however, an increasing number of anti-noise traders will become convinced that there is no new information that can justify the $10.50/$10.60 price level and will start to sell. As they do, they are, as noted earlier, engaging in a special kind of informed trading in the sense that they have good reason to believe that there is no such price-justifying information when others do not know this. Just like sales by a regular informed trader in possession of negative information, the sales of the anti-noise traders create an order imbalance that causes liquidity suppliers to acquire shares at a price above what the anti-noise trader correctly believes is their value and so leads to additional liquidity-supplier losses. And just like sales by a regular informed trader in possession of negative information, the continuing order imbalance will prompt the liquidity suppliers to gradually lower their bids and offers until they reach the neighborhood of $10.00/$10.10, at which point the trades of the anti-noise traders will stop.

Anti-noise trading cannot be assured to occur with every naked open-market manipulation, however, because the potential anti-noise traders may not be sufficiently confident that there is no new information to justify the elevated price after the manipulation is completed.

A third way that price can return to its proper level is simply the materialization, at some later date, of what, immediately prior to the manipulation, were the future cash flows being predicted by the pre-manipulation price. For example, if the share price immediately prior to the manipulation suggested that expected future cash flows would remain steady in perpetuity, but the elevated price after the manipulation completed suggested an increase in expected future cash flows, the price would return to its original, pre-manipulation level (barring any other news) once subsequent earnings reports showed that in fact cash flows had not increased. Obviously, this final process could take considerable time, leaving prices inaccurate for a significant period.

8.5.1.2 Ex Ante Perspective

Now assume, not unrealistically, that all the players have unbiased (though not necessarily accurate) expectations concerning the prevalence of successful naked open-market manipulation, and that all the players operate within a competitive environment. We want to compare what the longer-run equilibrium would look like in a world where such a trading strategy is occurring freely with what it would look like in a world where it is somehow blocked. The object is to see how the availability of the practice affects the wealth positions of the various participants and the implications of these effects in terms of fairness and, through the incentives they create, on efficiency.
a. Manipulators

Naked open-market manipulation will generate positive trading profits on an expected basis to the extent that its practitioners can accurately predict when asymmetric price responses will occur. The resources necessary to conduct a business in such trading are a combination of ordinary and specialized inputs. The ordinary inputs are physical, organizational, and financial assets that could equally usefully be deployed elsewhere in the economy. The specialized inputs are the efforts of key persons who possess abilities and skills uniquely useful for predicting such situations and acting on them. All of these inputs will be drawn into this business up to the point where, at the margin, the expected profits from successfully predicting and acting on such situations equals the costs of paying for the inputs. This activity occurs in an openly competitive environment and so the suppliers of the ordinary inputs will be paid a market return comparable to what they would earn if the resources they supplied were deployed instead another way. Thus, whether naked open-market manipulation occurs freely or not has no effect on their wealth positions. The persons with uniquely useful abilities and skills will be paid greater rents than they would be paid if they had to work in a different business because naked open-market manipulation was somehow blocked. Thus their wealth positions will be enhanced if such manipulation is allowed to occur freely.

b. Liquidity Suppliers

As we have seen from the example, ex post, liquidity suppliers will lose in their transactions with a successful naked open-market manipulator because the reversing purchases from the manipulators are on average at higher prices than the initial sales to them. The liquidity suppliers lose a second time in their transactions with the announcement or anti-noise traders that bring the price back to the level it would have been without the manipulation.

From the ex ante perspective, however, all these losses are passed on by the liquidity suppliers to the other traders in the market. This is because, as discussed in Section 8.4, liquidity suppliers gain in their transactions with uninformed traders, making half the spread with each sale to the uninformed trader and half from each purchase from an uninformed trader. To survive in a competitive market, a liquidity supplier must set its bids and offers so that these losses and gains balance out (plus, if we add some real-world flavour to the description, the gains must cover the returns paid to its personnel, a market return on the capital needed for real estate and equipment and for engaging in the trading itself, and compensation for the undiversified nature of the portfolio that the business will be holding most of the time). If its spreads are wider than this, it will not attract orders because they will be undercut by other liquidity suppliers. If they are narrower than this, at least some of its inputs will be receiving less than a market return, and thus the business will not be able to survive in the longer run.43

Notwithstanding the passing on by liquidity traders of these losses, the existence of naked open-market manipulations will still have a negative effect on the wealth positions of certain persons associated with the liquidity supply business, but only indirectly. As we have seen, the ex post trading losses are passed on through a wider spread between the bid and offer. This wider spread increases the cost of trading, which means that less trading occurs. Less trading means that less of both their ordinary and specialized inputs will be pulled into the business. Suppliers of the ordinary inputs will earn the same ordinary market return whatever the level of liquidity supply activity. For persons with abilities and skills uniquely useful for liquidity supply, however, they will be paid less in rents and so their wealth positions would be negatively affected by the prospect of successful manipulation of this type.
c. Uninformed Traders

The expected cost to uninformed traders from naked open-market manipulation is the need, in the cycle over time of a purchase and sale, to pay the increase in spread because this kind of manipulation is occurring: they will purchase at the offer but only be able to sell at the bid. Calculating the ultimate incidence of this cost on uninformed traders is a bit complicated, however. When an issuer’s entrepreneurs and initial investors engage in an initial public offering, the shares they are offering will be discounted to reflect the prospect that the spread must be paid with each subsequent sale and purchase in the secondary market as well as the prospect that any future equity offerings by the issuer over time will be similarly discounted. So, the entrepreneurs and early investors receive less than if there were no impact on the spread by this kind of manipulation. This discount continues at the same level for as long as the firm appears to have a long-run future. For uninformed investors who buy and sell less frequently than average, this discount makes the purchase a bargain and so they are gainers from the practice. For those who buy and sell more frequently than average, those are losers from the practice.

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Informed traders of each kind pay the same increased spread due to the presence of naked open-market manipulation that uninformed traders do. This increase in their cost of doing business has a depressing effect on the level of each of the kinds of informed activity. This decreases the level of resources going into each of these activities, with a negative wealth impact on the suppliers of the specialized inputs. The level of fundamental-value informed trading will be most sensitive to this increase in cost. This is because fundamental-value informed traders create, at a cost to them, the information on which they trade. A wider spread means their trading will be less profitable and so they have less incentive to create information. In contrast, the level of issuer insider and non-issuer insider informed trading and trading based on the tips of such insiders depends mostly on the opportunities that the insiders encounter in their employment.

The decrease in the level of fundamental-value informed trading is unfortunate because the social gain from its contribution to long-run price accuracy exceeds the social costs of the activity. Thus, the social disadvantage from a lower level of fundamental-value informed trading is likely to dominate the advantage from the likely smaller decrease in the other, socially undesirable, forms of informed trading.

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e. Anti-Noise Traders

The prospect of naked open-market manipulation will draw resources into the business of anti-noise trading, which increases the level of resources going into this activity. This produces a positive wealth impact on the suppliers of the specialized inputs.

8.5.1.3 Fairness Considerations

Based on the survey above, we can see that freely occurring naked open-market manipulation will not affect the wealth position of uninformed traders from an ex ante point of view because they are as likely to benefit as to be hurt when the price at which they buy or sell is influenced by such a manipulation. It may add to the riskiness of their trading, but this is a risk that can typically be eliminated by holding a diversified portfolio. They will face an increase in the bid-ask spread, but on average this will be compensated by the lower cost of buying shares that earn a given expected payoff.

The wider bid-ask spread will result in fewer resources being drawn into the businesses of liquidity supply and fundamental-value informed trading, thereby decreasing the wealth positions of their specialized input suppliers. The prospect of profits will draw resources into the business of manipulation and the business of
anti-noise trading, thereby increasing the wealth positions of their respective specialized input providers. A prospective flow of rents is not an entitlement, however. In a market economy, the offer of rents to prompt the suppliers of specialized inputs to come forward is simply the mechanism by which these resources get directed to the activity for which they are most particularly suited. The effects on the rents paid in the case of the four businesses being considered here do not raise any greater fairness issues than do the rents paid persons with special abilities and skills across the whole market-based part of our economy. The bottom line is that the more serious normative question concerning naked open-market manipulation is whether its effect on the allocation of resources enhances or decreases efficiency.

8.5.1.4 Efficiency Considerations

From an efficiency point of view, naked open-market manipulation has no redeeming virtues. It consumes resources that could be usefully employed elsewhere in the economy and has a negative impact on both price accuracy and liquidity.

a. Price Accuracy

As our discussion of the workings of the market shows, in the absence of manipulation, market prices have the remarkable quality of reflecting a large amount of information relevant to predicting an issuer’s future cash flows. Naked open-market manipulation moves price away from where it otherwise would be, at least temporarily and sometimes for longer, hence reducing price accuracy. In essence, it acts as a kind of informational pollutant, making stock prices noisier signals of actual value. Interestingly, however, while most commentators and jurists focus on the price distortion effects of the practice, reduced price accuracy may be in most cases the less important of its negative social consequences, at least unless an issuer’s shares were subject to such manipulation very frequently. This is because the period over which such a manipulation distorts price is typically quite short, a matter of days at most, at which point the issuer may credibly announce that there is no undisclosed information within its possession that could explain the price rise and only partial fallback, or because anti-noise traders quickly gain confidence that there exists no such information and trade accordingly. 46

Recall that the ways that accurate prices benefit the economy is by helping to allocate the economy’s scarce capital to the most promising potential real investment projects and by improving the utilization of the economy’s existing productive capacity through optimizing the signals provided to management about investment decisions and the signals given to boards and shareholders about the quality of management decisions. 47 Very short-run distortions in price of the kind that will typically occur with naked open-market manipulation will not seriously undermine the role that share prices play in guiding the real economy in these ways. However, if neither of these corrective forces comes into play, then the price can remain significantly inaccurate for a substantial period of time. 48 In this event, the manipulation would result in both inefficiencies arising from longer-term price inaccuracies and negative efficiency related to liquidity, which we will now discuss.
b. Liquidity

The prospect of freely occurring naked open-market manipulation has a clear long-term, ongoing negative impact on the liquidity of an issuer’s shares because liquidity suppliers will defend themselves against the possibility of losing to such manipulators, and losing again in the price correction process, by widening their bid-ask spreads and decreasing their depth of book. As we have seen, less liquidity reduces social welfare because of the resulting misallocation of resources over time and misallocation of risk: socially beneficial transactions fail to occur, leaving investors with suboptimal, riskier portfolios, and driving up the cost of capital for firms. By raising the costs of fundamental-value informed trading and thereby lessening the incentives to search out and trade on new information, less liquidity also reduces longer-run share price accuracy.

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The prospect of naked open-market manipulation also pulls additional resources into the anti-noise trading business. While these traders perform the socially useful function of correcting prices from their distorted level at the end of a manipulation, their efforts would not be needed in the first place absent the manipulation. Without the prospect of manipulation, these extra resources would be used elsewhere in the economy, positively contributing to the production of goods and services.

c. Resource Misallocation

There is one additional, more nebulous efficiency consideration: market confidence. This relates to a sense among investors that the market is fair, part of the fifth basic social goal discussed above. Even if naked open-market manipulation does not in fact decrease the wealth position of ordinary investors, and the additional risk created by it can be diversified away, public awareness that it occurs may hurt everyday investors’ ‘confidence’ in the stock market. Such manipulations may strike the public as unfair and improper in some way that is harmful to them. As a result, to the detriment of both them and others, they may participate in the stock market to a lesser degree. Typically, the best response to public misunderstanding is to resolve it through education, but where a perception may be especially difficult to eradicate and it is causing damage, then that perception may provide an independent policy ground for prohibiting the relevant conduct.

8.5.2 Are There Expected Profits?

The example of Mani above suggests that there can be expected profits associated with naked open-market manipulation. This is in sharp contrast with the conclusions of Daniel Fischel and David Ross’s seminal article, in which they argue that manipulation should not be legally prohibited. One of their two principal reasons for reaching this conclusion is that open-market manipulation cannot have expected profits associated with it. Thus, it need not be made illegal because it is self-deterring.

8.5.2.1 The Fischel and Ross Arguments

Fischel and Ross make two arguments as to why profitable manipulation is not possible. First, they say, most securities markets, and especially the stock of large public firms, are highly elastic and liquid. Because of this, they reason, trading will typically have no effect on price, as holders of a security will simply sell it to a willing purchaser and substitute into a different security with a similar cash-flow profile. This argument, though, ignores the basic lesson of microstructure economics that, to a liquidity supplier in an anonymous market, all trade in a stock is potentially informed and thus will in fact will generally move price at least to some extent.
Fischel and Ross’s second line of argument at least recognizes the possibility that a trade could be interpreted as indicating someone has information not yet reflected in price. Here, they say that bids and offers may move up if a trader putting in purchase orders is perceived to be informed by the market, in which case quoting behaviour will adjust to reflect the information thought to be motivating a transaction, but the trader will also be thought to be informed when she sells as well, thereby on average driving bid and ask back down to where they were. Moreover, the would-be manipulator will buy at the offer on the way up and sell at the bid on the way down. So on average, she will actually suffer a net loss. Given this, in the long run would-be manipulators will certainly lose, and so Fischel and Ross conclude that market manipulation is self-deterring. Anyone foolish enough to be a would-be manipulator will eventually learn her lesson and stop trying.

The problem with this second argument is that it fails to recognize the possibility of an asymmetric price response. Empirically we observe that the price response to new orders relating to any stock can, in fact, vary over time.

8.5.2.2 Can an Asymmetric Price Response Ever be Anticipated?

The mere fact that the price response to new orders varies over time does not by itself prove that naked open-market manipulation can generate expected profits. It is also necessary that circumstances arise under which an asymmetric response has some degree of predictability. Note that in the Mani example set out above, we posit that Mani rationally assesses that it is probable that his purchases will push price up by more than his subsequent sales will push them down, but we do not discuss his basis for this expectation. Thus, a key question is whether there are in fact circumstances under which it is more likely than not that there will be an asymmetric price response in a particular direction. The answer is that there are. Below, we give examples of a few such circumstances.

a. A Period of Unusual Uncertainty

One such circumstance is where it is predictable that there will be more fear of informed trading before a certain moment in time than after. For example: an issuer is expected to announce its earnings on a certain date and there is uncertainty as to what will be announced, with the possibility that it might be either above or below some mean expectation. In the run-up to the announcement, a liquidity supplier finds an order imbalance in either direction to have heightened significance because of the greater-than-usual likelihood that an issuer insider, or her tippee, is trading. Thus, if the manipulator put in orders creating such an imbalance during this period of extra uncertainty, it would prompt a greater than usual adjustment in the liquidity supplier’s bid and offer. Once the announcement is made, the fear of issuer insider trading would diminish and the liquidity suppliers’ bid and ask adjustments in response to order imbalances would diminish along with it. Thus, the manipulator can reverse her transactions with less impact on price and end up with a profit.

We should note, however, that while this kind of circumstance may arise quite often, it may not prompt very much manipulation. A manipulator trying to take advantage of such a circumstance will put herself in an unusually risky situation. The very reasons that make the liquidity supplier so sensitive to order imbalances mean that there is a heightened chance that informed trading is in fact going on. If it is, there is a 50–50 chance that the informed trader or traders are trading in the opposite direction from the manipulator, who is uninformed and hence has no idea which way they are trading. In such a case, the manipulator would need to transact in a very large number of shares for the price to move significantly because her orders would be just cancelling out the imbalance created by the informed trader or traders. At the end, the manipulator would be stuck with a huge inventory of shares at the time of the announcement, which, as predicted by the informed traders, moves the price in the wrong direction from what the manipulator wants.
Another circumstance, sometimes referred to as ‘shopping for stops’, would be where there are an unusually large number of stop loss orders existing at the moment.\textsuperscript{60} On the offer side, a stop-loss order is an order to buy if the price goes above a certain level. It would typically be placed by someone who is in a short position. He does so in order to place a ceiling on his potential losses if the share price goes above a certain point. If there are an unusually large number of stop-loss orders on the offer side, the manipulator’s purchases on the way up will have a super-charged effect on price because, as his orders drive the price up, the stop-loss orders are tripped, thereby triggering more buying orders. When the manipulator turns around to sell, the prices in the market, as they go down, will on average be well above the bid side stop-loss orders (typically put in by someone in a long position seeking a ceiling on her losses). So, prices do not decline as fast in reaction to the manipulator’s sales because none of the bid stop-loss orders are tripped.

The tricky part of this game, though, is that stop-loss orders that are posted with exchanges are not revealed. Also they may just be resting with a broker who is directed to submit them if the price reaches a certain level. Still, with aggressive trading to test the state of the market, a manipulator might be able to detect a situation with an unusually large number of stop-loss orders, though it could be expensive to do so.

\textbf{c. Book Fragility}

Adam Clark-Joseph provides fascinating indirect evidence of manipulative behaviour in the E–Mini S&P 500 futures contract market that appears to involve instances of naked open–market manipulation.\textsuperscript{61} Clark-Joseph offers the following facts. There are, in the Commodity Futures Trading Commission data, eight high frequency traders (HFTs) who regularly lose money on a series of small marketable orders. These same traders also make considerable money at times from a sequence of large marketable orders.

Clark-Joseph argues that the small marketable orders are exploratory, designed to determine whether the order book is ‘fragile’ on one side or the other. A fragile order book on a given side is one where the quantity of shares available at prices near the best quote is relatively small and does not refill immediately as marketable orders execute against the visible quotes that are there. In such a situation, a large marketable order executing against these quotes will move price significantly. If the exploratory trades reveal that the book is fragile on the offer side, then the HFT will be able to move the price with large, aggressive buy orders. If the HFT also forecasts that there will be a large number of marketable buy orders coming in (something that is often predictable), then it will be able to quickly unload the shares that it just purchased without a similarly strong downward pressure on price. Putting the position on has a large price impact because the book is fragile; taking off the position is expected to have a small price impact because it involves transacting with the anticipated marketable orders.

\textbf{8.5.3 The Appropriateness of Legal Sanctions}

The other principal reason that Fischel and Ross oppose the legal prohibition of manipulation is that no observable conduct separates manipulative trading from trading for other purposes. Determining the purpose of the transaction is highly speculative. Thus, they argue, making open–market manipulation illegal will deter many worthwhile transactions as well. This is because persons contemplating these worthwhile transactions will fear that their transactions will be mistaken for manipulative ones. We agree with their concern but take issue with their assumption that there is never observable conduct to distinguish manipulative transactions from socially useful ones.

Consider the three circumstances we discussed in Section 8.5.2.2 where it may be possible for a manipulator to assess that an asymmetric price response is more probable than not. In the case of the first circumstance — unusual uncertainty that will be resolved soon — there is indeed no observable conduct that would
separate the manipulator from an investor who simply buys based on hard work analysing the future of the issuer, and then sells when his best guess turns out to be correct when the issuer’s price increases. Thus, while, at least as a conceptual matter, there may be times in such a situation where naked open-market speculation will have positive expected profits, we see no way of intelligently imposing legal sanctions except where there is direct evidence, such as an email, as to the trader’s purpose.

In contrast, in the other two circumstances, shopping for stops and book fragility, a manipulative trader would need to engage in observable market conduct to enjoy expected profits: she would need to test the market to see what the stop loss or book fragility situation is. We thus advocate a rule that imposes legal sanctions for a series of purchases followed by a series of sales (or vice versa) that yield a profit where the first set of transactions was preceded by this kind of testing of the market. This kind of conduct would strongly suggest that the trader was entering into these transactions at least in part to profit from the socially negative practice of naked open-market manipulation, and quite possibly this was the only motivation. In other words, there is a low risk that the rule would deter transactions solely motivated by some other socially worthwhile purpose. There is nothing wrong with deterring transactions that are motivated both by a desire to profit from such manipulation and by some other socially worthwhile purpose. This is because something affirmative and observable—the testing of the market—was necessary for the socially negative manipulation motive to be included. So imposing legal sanctions should deter undertaking the affirmative conduct, which is the vehicle for acting on the manipulative motive, but not transactions based on a socially worthwhile purpose.

8.6 Conclusion

Preventing the manipulation of securities has long preoccupied the popular and political imaginations. Yet, much of the scholarly literature has remained suspicious of manipulation as a coherent and useful concept. This chapter considered a particular form of manipulation, attempted to identify who was harmed from the perspective of microstructure economics, and assessed the economic welfare effects of these harms. It should thus offer counsel to both governmental enforcement agents and defense lawyers alike by developing a more precise approach to the evidentiary burdens regulators should impose in optimally prosecuting manipulation, while avoiding the deterrence of desirable trades.
References


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The literature on manipulation features a chorus of commentators arguing about the definition and usefulness of the concept of manipulation. See, e.g., Fischel and Ross, ‘Should the law prohibit “manipulation”?’, 1991 (famously arguing that the concept of manipulation should be abandoned); Pirrong, ‘Squeezes, corpses’, 1994, 54 (‘[T]o define just what manipulation means…is a more difficult task than one might think, because the term “manipulation” is used very imprecisely and indiscriminately’).

See, e.g., Fischel and Ross, 503 (‘The drafters of the Securities Act of 1933 and the Securities Exchange Act of 1934…were
convinced that there was a direct link between excessive speculation, the stock market crash of 1929, and the Great Depression of the 1930s); Roach, ‘Hedge fund regulation’, 2009, 178 (‘The shocking results of the [Congressional] investigation uncovered high levels of market manipulation and led Congress to pass the first federal securities laws, the Securities Act of 1933’). However, there is significant debate as to whether significant manipulation had been in fact occurring in the years preceding the Great Depression. See Mahoney, *Wasting a Crisis*, 2015, 100–18; Jiang, Mahoney, and Mei, ‘Market manipulation’, 2005, 168–9.


Calculations made by the authors and on file with them.

A practice or regulation can lead to a social harm if it reduces economic efficiency in a particular way or systematically leads to unfair results. It can lead to a social gain if it improves economic efficiency or ameliorates some unfairness (see Section 8.3). Thus, the desirability of a regulation that seeks to prohibit a given practice depends on whether, considering on a net basis all the social harms and benefits involved in a comparison between a world with and without the regulation, the world with the regulation is superior to the world without it.

See, e.g., Putninš, ‘Market manipulation’, 2011 (providing a notable survey of various manipulative strategies, although the focus and scope differ from our own).

How the correction precisely occurs, however, will still matter to how a manipulation affects the wealth of various market participants and how dramatically it harms liquidity. See Section 8.5.1.1.b (showing that if the correction occurs due to informed trading, then liquidity providers will lose significantly again, while if it corrects due to a public disclosure, they will not).

Portions of Sections 8.3 and 8.4 draw significantly on more detailed treatments in our prior work. See Fox et al., ‘New stock market’, 2015, 217–26; Fox et al., ‘Informed trading and its regulation’, 2018.

The purchase referred to in the text may consist of just one buy transaction or a series of buy transactions in a relatively short period of time. The concept also covers a sale of a certain number of shares and their repurchase, under circumstances where the difference in the price reaction to the sale versus the repurchase results in the average repurchase price being less than the average sale price.


See Section 8.5.2.

See Section 8.3.3.2.


In the primary market, stocks are purchased from the company issuing those stocks, while in the secondary market, traders buy and sell stocks from each other. Stock exchanges are secondary markets.

Hicks, ‘Foundations’, 1939; Kaldor, ‘Welfare propositions’, 1939 (together introducing the Kaldor-Hicks conception of efficiency). The Kaldor-Hicks conception of efficiency, with all its limitations, remains the standard welfare criterion in law-and-economics analyses of corporate and securities law. Compare Kraakman et al., *Anatomy of Corporate Law*, 2017, 23 n.87. Other conceptions of fairness are of course possible (and plausible), and to the extent that such views are held, this study simply offers a complementary critique of manipulation.


See Davis, ‘Investors’ gains and losses’, 2015 (arguing, *inter alia*, that diversification assumptions are often false).

Foucault, Pagano, and Röell, *Market Liquidity*, 2013, 31 (‘The two main roles of a securities market are to provide trading services for investors who wish to alter their portfolios, and to determine prices that can guide the allocation of capital by investors and firms. . . . [A] market is efficient if it enables investors to trade quickly and cheaply (i.e., if it is liquid) and if it incorporates new information quickly and accurately into prices.’)

See, e.g., Chen et al., ‘Price informativeness and investment sensitivity’, 2007 (showing that the number of investment decisions tend to increase when a stock’s price has just risen).


Fox, 258–60.

Ibid. There is ample empirical evidence to suggest that accurate price signals do in fact have efficiency-enhancing effects on managerial decisions. See Foucault et al., 361–8 (collecting relevant empirical studies); see, e.g., Bond et al., ‘Real effects’, 2012.

In an efficient market, the market price is an unbiased predictor of an issuer’s future cash flows.

This concept of the best bid and offer—the prices at which small retail traders can fill, respectively, a market sell order and a market buy order—and the idea of depth of book will be explored further in Section 8.4.

See Foucault et al., 322–5 (analysing how illiquidity functions as a wedge separating transaction prices from assets’
fundamental values).

Harris, Trading and Exchanges, 214–15.

While separating traders into informed and uninformed is a basic building block of microstructure economics, our
taxonomy owes much in general to Larry Harris’s work. See Harris, Trading and Exchanges, 194.

Ibid. (discussing the different forms of information on which an informed trader may transact).

See Section 8.4.3.

See Fox et al., ‘Informed trading’.

Brealey et al., Principles, 2013, 302–8, 689.

See Brogaard et al., ‘High-frequency trading’, 2014 (finding that HFTs supply liquidity for 42 per cent of all trades and
provide the market quotes 42 per cent of the time).

See 17 C.F.R. § 242.611(a)(1) (2015) (establishing the rule); ibid. § 242.600(b) (defining relevant terms).

See Fox et al., ‘New stock market’, 207–16 (providing a detailed exposition of the mechanics of stock market trading).

See generally Akerlof, ‘Market for “lemons,”’ 1970 (analysing how informational asymmetries can drive declines in the
quality of goods traded in a market until only ‘lemons’ are left). Liquidity suppliers face the constant threat that they are
trading under conditions of information asymmetry and are thus only transacting when the trade is adverse to their
interests.

A more complete model of how the bid-ask spread is set would include a consideration of the costs of operations,
compensation for the utility decreasing risks to its principals of having a not fully diversified portfolio concentrated in
particular securities, and the need for capital. Breaking even in the long run requires covering these costs and a normal
market return on capital.

See Glosten and Milgrom, ‘Bid, ask’, 1985 (providing a model of trading behaviour under information asymmetries in
securities markets).

See Chan et al., ‘Intraday behavior’, 1995 (suggesting that adverse selection is an important determinant of the intraday
behaviour of bid-ask spreads); Glosten and Harris, ‘Estimating’, 1988 (estimating a model in which the bid-ask spread is
divided into an adverse selection component and a transitory component due to inventory costs, clearing costs, and other
factors).

In its definition of ‘manipulate’, the Merriam-Webster dictionary includes ‘to change by artful or unfair means so as to
serve one’s purpose’. Merriam-Webster, 2009, ‘Manipulate’.

See Harris, Trading and Electronic Markets, 2015, 22 (suggesting that ‘[t]rading is a zero-sum game when gains and losses
are measured relative to the market index’).

The description in this paragraph is a bit of an oversimplification, because, unlike in the example here involving Mani, the
market will include informed traders as well. Given the prospect of losses as the result of naked open-market
manipulation, the spread, which is the same for all traders, will be wider for informed traders as well, and so some of the
losses are passed on to them. See Section 8.5.1.2.d.

Barber and Odean, ‘Behavior’, 2013, 1534 (‘Many apparently uninformed investors trade actively, speculatively, and to
their detriment.’)

See Fox et al., ‘Informed trading’.

See Section 8.5.1.1.b.

See Section 8.3.3.1.

See Section 8.5.1.1.b.

See Section 8.3.3.2.

See Section 8.3.3.2.

See Saad, ‘U.S. stock’, 8 May 2013. Michael Lewis attributes this drop, which occurred in the face of a sharply rising market
over the previous five years, to a sense that the market is unfair. See Lewis, 200–1; see also Editorial Board, ‘Hidden cost’,
2014.

Fischel and Ross, 506.

Ibid., 517–18.

Ibid., 517.

See Section 8.4.3.

Fischel and Ross, 518.

Since Fischel and Ross’s work, many other commentators have recognized this flaw in their argument, often in different
respects. See Harris, Trading and Exchanges, 2003, 259, 265–8 (developing the possibility of asymmetric price response);
manipulator may profit by trading so as to alter others’ expectations); see also Allen and Gorton, ‘Stock price
See Section 8.4.3; see also Easley et al., ‘Flow toxicity’, 2012, 1478; Easley et al., ‘Time-varying’, 2008, 198 (arguing that trading dynamically reacts to the perception of information-based trading).

See Easley et al., ‘Time-varying’, 197–9 (showing how the probability of informed trading varies around the days of earnings announcements: ‘the proportion of informed trades increases as the announcement date approaches and declines after the announcement’).

Harris, Trading and Electronic Markets, 2015, 14 (discussing the triggering of stop-loss orders as a market manipulation strategy).

Clark-Joseph, ‘Exploratory trading’, 2013 (documenting the existence of a kind of price decoding high frequency trader in the futures market).