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Symposium: Unethical Says Who?: A Look at How People and Institutions Help Businesses Fulfill Their Ethical Obligations

Redefining Trade-Based Market Manipulation

Matthijs Nelemans

REDEFINING TRADE-BASED MARKET MANIPULATION

Matthijs Nelemans*

I. INTRODUCTION

A. The Subject, Reason, and Objective of the Article

Trade-based market manipulation ("manipulation") is thought of as trading shares specifically to cause a price change. The behavior may best be explained by an example. Consider a trader willing to sell one million shares of ABC stock to an institutional investor in a contractual, person-to-person, deal. In the morning, the two parties enter into a contractual agreement, stating that the closing price of the ABC shares on the exchange will be taken as the transaction price. In the afternoon, the trader buys 10,000 shares of ABC on the exchange for no other reason than to inflate the price from $10 to $11, thus fixing the closing price higher in his favor. Obviously, the trader benefits at the expense of the institutional investor.

Many nations have regulations against manipulation: Section 10(b) of the Securities and Exchange Act of 1934 ("SEA"), Rule 10b-5, and Section 9(a)(2) of the SEA prohibit manipulation in the United States; Section 1(2)(a) of the Market Abuse Directive ("MAD") 2003/6/EC in the European Union; and Section 1041A of the Corporations Act ("CA") 2001 in Australia.[1] The problem is that these regulations, which will be discussed in Section I.A.1., are overly broad. The irony is that the

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[1] The repression of trade-based market manipulation goes back more than a century. One of the first cases in the United Kingdom occurred in 1892: Scott v. Brown, Doering, McNab & Co., (1892) 2 Q.B. 724, 730 61 L.J. (N.S.) 738, 741 (C.A.). The first case in the United States arose in 1933: United States v. Brown, 5 F. Supp. 81, 85 (S.D.N.Y. 1933). *See* LOUIS LOSS & JOEL SELIGMAN, SECURITIES REGULATION 3986.10-20 (VIII Revised 2004); *see also* Hubert De Vauplane & Odile Simart, *The Concept of Securities Manipulation and Its Foundations in France and the USA*, 23 BROOK. J. INT'L L. 203, 206-10 (1997).

regulations, in conjunction with common enforcement actions,[2] may ban welfare-enhancing trades.

Unsurprisingly, the *status quo* has instigated an academic debate about the just definition of manipulation.[3] Fischel and Ross delivered an analysis of existing definitions and suggested an improved definition.[4] They concluded that "there is no objective definition of manipulation,"[5] and so, "[t]he only definition that makes any sense is subjective—it focuses entirely on the intent of the trader."[6] Yet, their argument for shifting from an objective definition to a subjective one, which will be examined in Section I.A.2, has both a practical and doctrinal flaw.

This Article aims to confront these problems by proposing an improved definition of manipulation, which is not only useful to design future policy, but also to interpret existing prohibitions. Further, since defining behavior is the start of a natural research sequence, other points of controversy can be more readily discussed, such as the tracing of manipulation,[7] the incidence of manipulation,[8] and the justification for

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[2] There is a continuous stream of enforcement actions. *See*, *e.g.*, Rajesh K. Aggarwal & Guojon Wu, *Stock Market Manipulations*, 79 J. BUS. L. 1915, 1935, 1938 (2006). Their sample includes 142 manipulation cases brought by the SEC between 1990 and 2001. About half the cases included some form of trade-based market manipulation. Further, European and Australian authorities were recently involved in two high profile cases. The German regulator investigated Citigroup in 2005. *See* Päivi Munter, *Criminal Investigation Sought in Citigroup Bond Case*, FINANCIAL TIMES, Jan. 24, 2005. The Australian regulator came to a settlement with a director of HIH Insurance, Ltd. *See also* David Elias, *Adler Guilty on 4 Charges*, THE AGE, Feb. 17, 2005.

[3] *See, e.g.*, Guido A. Ferrarini, *The European Market Abuse Directive*, 41 COMMON MKT. L. REV. 711 (2004); Omri Yadlin, *Is Stock Manipulation Bad? Questioning the Conventional Wisdom with the Evidence from the Israeli Experience*, 2 THEORETICAL INQ. L. 839, 842 (2001); VIVIEN GOLDWASSER, STOCK MARKET MANIPULATION AND SHORT SELLING 99-138 (1999); Daniel R. Fischel & David J. Ross, *Should the Law Prohibit "Manipulation" in Financial Markets?*, 105 HARV. L. REV. 503, 507-10 (1991); Gary L. Gastineau & Robert A. Jarrow, *Large-Trader Impact and Market Regulation*, 47 FIN. ANAL. J. 40, 41 (1991).

[4] *See* Fischel & Ross, *supra* note 3, at 510 ("Manipulative trades could be defined as profitable trades made with 'bad' intent—in other words, trades that meet the following conditions: (I) the trading is intended to move prices in a certain direction; (2) the trader has no belief that the prices would move in this direction but for the trade; and (3) the resulting profit comes solely from the trader's ability to move prices and not from his possession of valuable information.").

[5] *Id.* at 512.

[6] *Id.* at 510.

[7] *See, e.g.,* Marcello Minenna, *The Detection of Market Abuse on Financial Markets: A Quantitative Approach,* at 32-33 (2005), http://ssrn.com/abstract=483962 (2005); LARRY HARRIS, TRADING AND EXCHANGES 273-74 (2003); Yadlin, *supra* note 3, at 849-50; IOSCO, INVESTIGATING AND PROSECUTING MARKET MANIPULATION 12-21 (2000); GOLDWASSER, *supra* note 3, at 113-19; Steve Thel, *$850,000 in Six Minutes—The Mechanics of Securities*

regulation.[9] However, the improved definition does not resolve the enforcement complexities, nor does it examine the incidence of manipulation.

1. Current Prohibitions and Their Shortcomings

In the United States, Section 10(b) of the SEA[10] and Rule 10b-5[11] have become the most important prohibitions to counteract manipulation. The language of the Statute is at least as important as the language of the Rule, since courts have interpreted the Statute more narrowly than the Rule.[12] According to the Statute, it is unlawful "[t]o use or employ, in connection with the purchase or sale of any security. . . any manipulative or deceptive device or contrivance." Section 10(b) of the SEA, like Rule 10b-5, is so broad that informed traders who execute large transactions

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Manipulation, 79 CORNELL L. REV. 219, 291-94 (1994); Fischel & Ross, *supra* note 3, at 519-21; Gastineau & Jarrow, *supra* note 3, at 44-45; J.I. GOLDSTEIN & T.A. LEVINE, SECOND ANNUAL MARKET MANIPULATION 120-34 (1990).

8 *See, e.g.,* Asim Ijaz Khwaja & Atif Mian, *Unchecked Intermediaries: Price Manipulation in an Emerging Stock Market*, 78 J. FINAN. ECON. 203 (2005); Guolin Jiang, Paul G. Mahoney & Jianping Mei, *Market Manipulation: A Comprehensive Study of Stock Pools,* 77 J. FIN. ECON. 147 (2005); Aggarwal & Wu, *supra* note 2; Yadlin, *supra* note 3; Paul G. Mahoney, *The Stock Pools and the Securities Exchange Act*, 51 J. FINAN. ECON 343 (1999).

9 *See, e.g.,* Thel, *supra* note 7, at 287-97; Fischel & Ross, *supra* note 3, at 553; Gastineau & Jarrow, *supra* note 3, at 45.

10 Section 10(b) of the Exchange Act provides:

> It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce or of the mails, or of any facility of any national securities exchange. . . (b) To use or employ, in connection with the purchase or sale of any security registered on a national securities exchange or any security not so registered, . . . any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors.

15 U.S.C. § 78j(b) (2000).

11 Rule 10b-5 provides:

> It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or any facility of any national securities exchange, (a) To employ any device, scheme, or artifice to defraud, (b) To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or (c) To engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.

17 C.F.R. § 240.10b-5 (1951).

12 ALAN PALMITER, SECURITIES REGULATION 268-69 (2002).

might be qualified as manipulators even though they discount new information into the stock price. It is common knowledge that informed traders are necessary to keep financial markets efficient.[13] As a result, by erring on the side of caution, they may forego welfare-enhancing trades.

Another statute against manipulation is Section 9(a)(2) of the SEA,[14] which has become obsolete due to the high burden of proof and its inapplicability to the over-the-counter market.[15] This provision applies to "a series of transactions in any security. . . raising or depressing the price of such security." Remarkably, it encompasses all transactions raising or depressing the price, thus including transactions that discount new information in the price and secure efficient prices. I recognize that the applicability of the provision is limited by a *mens rea* element: "for the purpose of inducing the purchase or sale of such security by others." Nevertheless, it is inaccurate to compensate an overly broad *actus reus* with a *mens rea* element. This would still mean that traders are not allowed to trade and discount new information in the price, if it is for the purpose of inducing other traders to follow suit.[16]

In the European Union, twenty-five Member States have implemented a new prohibition on manipulation in the last few years: Section 1(2)(a) MAD 2003/6/EC. In short, this provision requires that market participants refrain from trading when their transactions would

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13 *See*, *e.g.*, HARRIS, *supra* note 7, at 235-43.

14 Section 9(a)(2) of the Exchange Act provides:

> It shall be unlawful for any person, directly or indirectly, by the use of the mails or any means or instrumentality of interstate commerce, or of any facility of any national securities exchange, or for any member of a national securities exchange . . . (2) To effect, alone or with one or more other persons, a series of transactions in any security registered on a national securities exchange or in connection with any security-based swap agreement (as defined in section 206B of the Gramm-Leach-Bliley Act) with respect to such security creating actual or apparent active trading in such security, or raising or depressing the price of such security, for the purpose of inducing the purchase or sale of such security by others.

15 U.S.C. § 78i(a) (2000).

15 *See* ALAN R. BROMBERG AND LEWIS D. LOWENFELS, SECURITIES FRAUD AND COMMODITIES FRAUD § 6:67, 195-97 (2d ed. 2003).

16 Public companies frequently buy large amounts of shares, inducing the market to purchase shares and to bring the stock price to the fundamental value. *See*, *e.g.*, Jesse Fried, *Insider Signaling and Insider Trading with Repurchase Tender Offers*, 67 U. CHI. L. REV. 421, 426-34 (2000). Due to the overly broad *actus reus*, Section 9(a)(2) SEA 1934 could in fact restrict public companies to use buy-back programs for signaling purposes.

secure the price at an abnormal level.[17] Although the law does not define "abnormal level," the prohibition might cover the situation in which a trader increases the price from $10 to $11, provided that the price had previously been stable at $10 for a sufficient period of time. However, the European prohibition ignores the fact that this trader could have impounded new information in the price. Therefore, it may criminalize welfare-enhancing trades and deter legitimate traders.

Furthermore, the Australian prohibition in Section 1041A CA 2001 is limited to transactions that create an artificial price.[18] Admittedly, artificial price is more precise than abnormal price, but the concept still leaves the potential for multiple interpretations. The financial markets regulator ("regulator") could use the prohibition on manipulation to counteract various transactions, *i.e. all* transactions raising or depressing the price, *uninformed* transactions raising or depressing the price, transactions *having the purpose of raising or depressing the price*, or transactions *moving the price away from the fundamental value*. Evidently, the regulator has discretionary powers to apply the prohibition as long as the term artificial price or the behavior that results in an artificial price is not defined precisely.

What can be concluded from all of these prohibitions? It seems that neither Section 10(b), nor Rule 10b-5, nor Section 9(a)(2) of the SEA precisely delineates manipulation. Even though courts have interpreted and qualified the type of behavior that counts as manipulation, significant ambiguity in defining the term "manipulation" still exists.[19]

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[17] Section 1(2)(a) MAD 2003 provides:

> Market manipulation shall mean transactions or orders to trade which give, or are likely to give, false or misleading signals as to the supply of, demand for or price of financial instruments, or which secure, by a person, or persons acting in collaboration, the price of one or several financial instruments at an abnormal or artificial level.

Market Abuse Directive, Section 1(2)(a) 2003/6/EC.

[18] Section 1041A CA 2001 provides:

> A person must not take part in, or carry out . . . : (a) a transaction that has or is likely to have; or (b) 2 or more transactions that have or are likely to have; the effect of: (c) creating an artificial price for trading in financial products on a financial market operated in this jurisdiction; or (d) maintaining at a level that is artificial (whether or not it was previously artificial) a price for trading in financial products on a financial market operated in this jurisdiction.

Corporations Act, § 1041A 2001 (Australia).

[19] *See, e.g.*, A.A. SOMMER JR., FEDERAL SECURITIES EXCHANGE ACT OF 1934 §§ 6.01-6.06 (2004) (providing an overview of the caselaw); BROMBERG & LOWENFELS, *supra* note 15, at §§ 6:56-6:75; GOLDSTEIN & LEVINE, *supra* note 7, at 3-99.

Moreover, the European and Australian prohibitions may be overinclusive due to the vague delineation of manipulation. The European and Australian courts have not produced any case law that sets a precedent to protect informed traders. The problem, therefore, is that these prohibitions most likely cover legitimate welfare-enhancing trades.

a. An Academic Definition and its Shortcomings

The definition of manipulation has been widely debated, and legal scholars have suggested several definitions attempting to cover the various facets of manipulation. Fischel and Ross wrote a provocative article in the early 1990s discussing the need for regulating manipulation, to which Thel levied a serious reply.[20] Fischel and Ross analyzed existing definitions and suggested an improved one.[21] They concluded that "there is no objective definition of manipulation,"[22] and so, "[t]he only definition that makes any sense is subjective—it focuses entirely on the intent of the trader."[23] Thel did not question the definition suggested by Fischel and Ross, but merely focused on the arguments regarding regulating manipulation.[24] Yet, the shift from an objective to a subjective definition is both practically and doctrinally flawed.

What is the practical flaw? In situations of manipulation, bad intentions can have both practical and beneficial effects. Envision an *informed* trader who *intends* to manipulate the price. This trader does not cause any damage, despite his bad intentions. On the contrary, his trading is actually beneficial to the market as a whole, discounting new information in the price. Evidently, this type of trader should be excluded from the prohibition, but this is only possible if a clear objective

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20 *See* Fischel & Ross, *supra* note 3; Thel, *supra* note 7.

21 *See* Fischel & Ross, *supra* note 3, at 510 ("Manipulative trades could be defined as profitable trades made with 'bad' intent - in other words, trades that meet the following conditions: (1) the trading is intended to move prices in a certain direction; (2) the trader has no belief that the prices would move in this direction but for the trade; and (3) the resulting profit comes solely from the trader's ability to move prices and not from his possession of valuable information.").

22 *Id.*

23 *Id.*

24 Thel, too, derives the normative judgment from the intent of the trader. Thel, *supra* note 7, at 221 n.17 ("When used in this Article, unless the context otherwise requires, the word 'manipulation' means buying a security *for the purpose* of increasing the reported price or selling a security for the purpose of decreasing the reported price.") (emphasis added).

definition of manipulation exists. For this reason, focusing *entirely* on the trader's bad intent does not make sense. Moreover, traders with good intent sometimes execute detrimental transactions. An *uninformed* trader who has *no intentions of manipulating* the price may exercise large price pressure and cause extensive damage. One should be able to qualify this behavior as manipulation, *e.g.* in civil cases. Yet, according to Fischel and Ross's suggested definition, this behavior could not amount to manipulation, since there was no intent, notwithstanding the significant damages.

There is also a doctrinal flaw. When it comes down to defining prohibited behavior, legal scholars commonly agree that a prohibition should merely cover objective undesirable behavior. Indeed, no one is punishable for their thoughts—*cogitationis poenam nemo patitur*. This means one cannot automatically shift from an objective to a subjective prohibition. Fischel and Ross clearly endorse this viewpoint by acknowledging that "the law typically requires an objectively harmful act before sanctions are levied[]" and that "[b]ad intent by itself is not sufficient."[25] Nevertheless, they prefer to derive the definition of manipulation from the trader's subjective intentions. They argue that because prohibitions generally require clearly *observable* objective harm, while manipulation does not produce easily-observable, objective harm, the term "manipulation" should be defined subjectively. Fischel and Ross's reasoning, however, does not withstand careful scrutiny.

If Fischel and Ross believe that prohibitions in general should merely cover behavior resulting in clearly *observable* objective harm, and that manipulation usually does not produce such harm, they should not have designed a new definition of manipulation. Remarkably, they suggested an improved definition of manipulation that focused on the trader's intent. In addition, because Fischel and Ross considered observability of the objective harm to be essential, their suggested definition would be expected to emphasize the observability in some way. They concluded, however, that the prohibition should preferably not rest on the unobservable objective harm, but instead on the unobservable intent of the trader. This is an exchange of one unobservable element for another. Clearly, they have not succeeded in designing a prohibition on manipulation that incorporates the observability of the trader's behavior.

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[25] *See* Fischel & Ross, *supra* note 3, at 519.

Furthermore, Fischel and Ross's assumption that prohibitions should only cover behavior producing clearly *observable* objective harm is relative. I agree that most prohibitions cover behavior that results in observable objective harm. Indeed, by prohibiting only this kind of behavior, authorities would face fewer enforcement complexities, limiting the probability of Type I errors. At the same time, however, prohibitions covering unobservable harm could contribute to shaping and changing norms and preferences,[26] which may offset the costs of false convictions. Moreover, authorities regularly enforce many other complex prohibitions, such as prohibitions on tax evasion and insider trading,[27] or establish proof of the unobservable *mens rea*, such as "knowledge" or "willful." Proof of manipulation and its objective harm could largely depend on circumstantial evidence, just like proof of tax evasion, insider trading, or *mens rea* does.[28]

B. The Structure of the Article

A few questionable prohibitions and definitions of manipulation have been proposed by various legal scholars. Given the shortcomings of these suggested definitions, the main purpose of this Article is to construct an alternative objective definition of manipulation, which takes into consideration the societal costs of trading. The blueprint of a definition rests upon the behavior and consequences of manipulation. The first element, the *actus reus*, is straightforward. A manipulator, like any other trader, executes one or more transactions. Therefore, the consequences of the transactions are the distinguishing factor, in particular, the societal costs. As will be shown, the core of manipulation can best be described as *exercising unsupported price pressure* because this creates societal costs.[29]

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[26] *See, e.g.*, Oren Bar-Gill and Chaim Fershtman, *Law and Preferences*, 20 J.L. ECON. & ORG. 331, 331-32 (2004); Ted Sampsell-Jones, *Culture and Contempt: The Limitations of Expressive Criminal Law*, 27 SEATTLE U. L. REV. 133, 133-34 (2003); Robert Cooter, *Expressive Law and Economics*, 27 J. LEGAL STUD. 585, 586 (1998); Kenneth G. Dau-Schmidt, *An Economic Analysis of the Criminal Law as a Preference-Shaping Policy*, 39 DUKE L.J. 1, 2-3 (1990).

[27] *See, e.g.*, Linda S. Eads, *From Capone to Boesky: Tax Evasion, Insider Trading, and Problems of Proof*, 79 CAL. L. REV. 1421, 1421, n.1 (1991).

[28] *Id.* at 1454, 1466.

[29] I merely consider how transactions create societal costs and ignore the potential costs of enforcing such a prohibition on manipulation. Nevertheless, one of the outcomes of the analysis is the introduction of a materiality standard, regulating the application of the prohibition and incorporating the costs of enforcement. At the extreme end, the materiality standard could in fact obstruct the use of the prohibition.

The remainder of the Article proceeds as follows. Section II is descriptive. Section II.A.1 introduces a novel concept called price pressure, which extends the commonly used concept of price change. Section II.A.2 examines how one can exercise price pressure, and how price pressure explains price changes and shows that prohibitions could advantageously bypass the term price changes. Section III develops an alternative standard for evaluating different forms of price pressure. Here the concern is normative. Supported and unsupported price pressures are differentiated from one another. As a result, a prohibition could be based on the unsupported price pressure-standard, allowing supported price pressure but barring unsupported price pressure.

Section IV of this Article considers certain policy of existing prohibitions on manipulation. The current prohibitions are not always compatible with the unsupported price pressure-standard and may be tailored to the requirements of the standard. Furthermore, the prohibitions may be limited with a materiality standard, thereby taking into account the enforcement costs with regard to immaterial, unsupported price pressure. Subsequently, the analysis sheds light on the longstanding debate concerning the possibility of designing an objective definition of manipulation and the specific role of the *mens rea* element. Finally, Section V examines the application and extension of the unsupported price pressure-standard.

II. THE DESCRIPTIVE SIDE OF PRICE PRESSURE

A. How to Define Price Pressure?

Manipulation has both a descriptive and a normative side. This Section analyzes manipulation from a descriptive perspective. It explains what price pressure is, how it relates to price changes, and how the extent of the price pressure is determined. According to economic theory, transactions have at least two effects. Transactions sometimes *directly* influence prices, causing prices to change or stabilize.[30] Additionally, transactions *always* spread market information, which

[30] *See, e.g.,* Robert W. Holthausen & Robert W. Leftwich, *The Effect of Large Block Transactions on Security Prices. A Cross-Sectional Analysis*, J. FIN. ECON. 237 (1987); Myron S. Scholes, The *Market for Securities: Substitution versus Price Pressure and the Effects of Information on Share Prices*, 45 J. BUS. L. 179 (1972); Alan Kraus & Hans R. Stoll, *Price Impacts of Block Trading on the New York Stock Exchange*, 27 J. FIN. 569 (1972). Still, most transactions (95.9%) do not result in a price change or result in a small price change of 1/8 percent. *See* Thel, *supra* note 7, at 224.

traders use for their investment decisions.[31] Market information sometimes *indirectly* influences prices. Section II discusses the role that these transactions have regarding direct price influence. Section V.B.1 extends the analysis to transactions that spread market information and indirectly influence prices.

1. The Definition of Price Pressure

A preliminary issue is how the execution of transactions results in a price change. Accordingly, the efficient market hypothesis provides a ready-to-use description.[32] Corporations first disclose new information, traders then execute transactions, and the price finally adapts to the new information. Since disclosed information drives transactions, information will be discounted in the price. New information, however, is not a necessary condition for price changes. Financial markets are, to a large extent, but not completely, efficient. As a result, they leave room for traders who engage in large transactions to dry up or wash over liquidity, forcing the price up or down for some limited time. In such situations, no information is discounted in the price. While it stands to reason that most traders have insufficient capital to cause price changes, large traders in liquid markets and small traders in illiquid markets will sometimes be able to inflate or deflate the price.

To study manipulation, one should look at the *individual* contributions to the *total* price change, not at the collective effort to change prices. This is an underexposed aspect explored in previous articles and in cases involving manipulation. Quite often, the manipulator is simply held accountable for the total price change, even though such reasoning is not always justifiable. Envision a market with one manipulator and two normal traders. Each person buys stock in corporation ABC within a short interval, while the price of ABC shares rises from $10 to $15 synchronously. The manipulator might be completely responsible for this price change, even though his

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[31] Sanford J. Grossman & Joseph E. Stiglitz, *On the impossibility of Informationally Efficient Markets*, 70 AMER. ECON. REV. 393, 393 (1980) (arguing that "the price system makes publicly available the information obtained by informed individuals to the uninformed."). Ronald J. Gilson & Reinier H. Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549 (1984) (explaining how derivatively informed traders extract information from other traders).

[32] *See, e.g.*, Burton G. Malkiel, *The Efficient Market Hypothesis and Its Critics*, 17 J. ECON. PERSPECT. 59 (2003); Robert J. Shiller, *From Efficient Markets Theory to Behavioral Finance*, 17 J. ECON. PERSPECT. 83 (2003); ANDREI SHLEIFER, INEFFICIENT MARKETS. AN INTRODUCTION TO BEHAVIORAL FINANCE (2000).

contribution might be negligible. So, the challenge is to determine if, and to what extent, the manipulator and his subset of transactions has contributed to the price rise, and to what extent the other traders are responsible.

In order to enable this appraisal, we can move away from the conventional definitions of manipulation, which normally concentrate on the execution of transactions and *price changes*. This Article takes a different approach and focuses on the vital link between transactions and prices—the price pressure. A trader first executes transactions, then exercises price pressure, and lastly influences the price. Price pressure is defined as the contribution to the total price change. I prefer the term price pressure instead of contribution to the total price change, thereby making a clear distinction between the various forces that add up to the price change and the actual price change itself. Price pressure is the independent or explanatory variable, while price change is the dependent variable. According to this approach, the accumulation of all individual price pressure equals the price change.

2. Price Pressure and the Price

Most traders exercise no, or negligible, price pressure. The category of traders exercising *relevant* price pressure is small. To illustrate the idea of price pressure, consider the following model of a market with three traders (*X*, *Y*, and *Z*). Each trader exercises *relevant* price pressure (*X′*, *Y′*, and *Z′*) within a certain interval. The regulator suspects *X* of manipulation by exercising *X′* and investigates how the three traders and their price pressure explain the price change, so that he will have a reliable estimate of the extent of *X′*. The regulator first determines the pre-manipulation price at *t*. He then estimates the values *X′*, *Y′*, and *Z′* between *t* and *t+i* in order to explain the stock price at *t+i*. The pre-manipulation price at *t* and the post-manipulation price at *t+i* can be any positive number. The values *X′*, *Y′*, and *Z′* are positive for upward price pressure, negative for downward price pressure, and zero for no price pressure. The relationship between the three types of price pressure and the total price change is depicted in the following equation:

$$Stockprice_{t+i} - Stockprice_t = X'+Y'+Z' = \sum_{h=1}^{i} x_{t+h} + \sum_{h=1}^{i} y_{t+h} + \sum_{h=2}^{i} z_{t+h}$$

In order to assess whether *X* is indeed a manipulator, the regulator should first determine *X′* by using the step-by-step plan described in Section II.B, and then make a normative judgment about *X′* on the basis

of the standard developed in Section III. There are two approaches for estimating *X'*. The first option is to assess *X'* directly by deriving *X'* from the price change. The second is to estimate *X'* by subtracting all other forms of price pressure from the price change. Assume that *X'*, *Y'*, and *Z'* are in fact +$5, -$3 and +$1, respectively, while the total price change is +$3. The regulator will probably assess *X'* directly. Nevertheless, he could also calculate *X'* by subtracting *Y'* and *Z'* from the price change: (+$3) - (-$3) - (+$1) or (+$5). The direct way is preferable as it is less convoluted and entails fewer arithmetic steps. Nevertheless, the indirect way might serve as an additional check, especially when *Y'* and *Z'* are easy to discover.

The suspect will often contribute in some way to the price change. Sometimes, while he is not completely responsible for the price change, the suspected trader might have: (1) reinforced, (2) stabilized, or (3) created a price change. The trader *reinforces* a price change when he brings about a price change that is larger than it would be without *X'*, *stabilizes* a price change when the price change is weaker than it would be without *X'*, and *creates* a price change when he is fully responsible for the complete price change. For that reason, when a regulator suspects *X* of manipulating the price, because, for example, the regulator observes no price change or a large price change when he expects otherwise, he cannot decide the direction or the extent of *X'* just by looking at the stock price behavior.[33] If a regulator focuses on the stock price behavior instead of the price pressure, disregarding the subtle difference, chances are he will under- or over-estimate the extent of *X'*.

B. How to Determine Price Pressure?

The preceding analysis suggests that the regulator should determine the extent of the suspect's price pressure. In making the determination, the regulator should use the following sequence: first, approximate the extent by linking the suspect's trading volume to the total price change;

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[33] Consider the following two situations. In the first situation, a regulator believes that a manipulator has operated, and he observes no price change, where he expects otherwise. What is the size of *X'*? *X'* could have been either downward or upward and either small or large. *X'* could have been -$0.1. That is when the combination of *Y'* and *Z'* turns out to be +$0.1. But *X'* could just as well have been -$5, provided that the other forces add up to +$5. In the second situation, a regulator believes that a manipulator has operated, and he observes a price change of +$5, where he expects otherwise. What is the size of *X'*? *X'* could have been either downward or upward and either small or large. *X'* could have been +$0.1. That is when the combination of *Y'* and *Z'* turns out to be +$4.9. However, *X'* could just as well have been +$5, provided that *Y'* and *Z'* add up to $0.

second, polish the approximation by discounting the characteristics of the suspect's transactions.

1. Approximating the Suspect's Price Pressure

There is a simple formula to approximate the suspect's price pressure: ('*the suspect's trading volume*' / '*the total trading volume*') * ('*Stock price*$_{t+1}$' – '*Stock price*$_t$'). Consider the following two examples on how to apply the formula.[34]

In the first situation, the suspect has bought 10,000 shares of ABC within the defined interval and the rest of the market has bought 5,000 shares of ABC. So, both the suspect and the rest of the market exercised upward price pressure. Suppose that the stock price has increased from $10 to $12 within the defined interval. We are now able to estimate the suspect's price pressure, which by and large is (10,000 / (10,000 + 5,000)) * ($12 - $10) or +$1.33. At the same time, the other market participants have exercised a price pressure as large as (5,000 / (10,000 + 5,000)) * ($12 - $10) or +$0.66. The price pressure of the suspect and the price pressure of the rest of the market add up to the price change of +$2.

In the second situation, the suspect has bought 10,000 shares of ABC within the defined interval and the rest of the market has sold 5,000 shares of ABC. In this situation, the price pressure of the suspect and the rest of the market is in the opposite direction. The suspect exercised upward price pressure and the rest of the market exercised downward price pressure. Again, the stock price has increased from $10 to $12. The suspect's price pressure is (10,000 / (10,000 - 5,000)) * ($12 - $10) or +$4. The other market participants have exercised a price pressure of (-5,000 / (10,000 – 5,000)) * ($12 -$10) or -$2. So, the suspect's price pressure and the other price pressure add up to the price change of +$2.

2. Polishing the Approximation

Now that the regulator has an approximation of the suspect's price pressure, he should polish the estimate. The articles of Fischel & Ross

[34] In case the price pressure of the suspect and the price pressure of the rest of the market are identical and contrary, so that the price completely stabilizes, the methodology changes. Imagine that the suspect's and the market's price pressure are +$5 and -$5, respectively. It is impossible to calculate the suspect's price pressure (+$5/0). Alternatively, the regulator should estimate what the price change would have been *without the stabilizing transactions*. Because this situation is exceptional, it exceeds the scope of this Article and, therefore, it is not addressed herein.

and Thel make clear how a manipulator is able to build up price pressure.[35] Transactions of significant volumes move the downward sloping demand curve,[36] act on the liquidity of the market,[37] and/or act on the bid-ask spread,[38] thereby building up price pressure. As a general rule, the larger the number, the size, and/or the density of the transactions, the larger the price pressure. The regulator could use this insight to polish the approximation: if the suspect's transactions were relatively more aggressive, that is if they were relatively more successful in moving the downward sloping demand curve, in acting on the liquidity of the market, and/or in acting on the bid-ask spread than the transactions of the rest of the market, the approximation of the suspect's price pressure is on the low side and might be increased.

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[35] *See* Thel, *supra* note 7, at 227-47; Fischel & Ross, *supra* note 3, at 513-19. These authors discussed how traders could use various mechanisms to cause price changes, like moving the downward sloping demand curve, acting on the liquidity of the market, and acting on the bid-ask spread. Traders will use the same mechanisms in order to cause price pressure. The bid-ask bounce could be denoted as price pressure or price change, depending on the interval and the other forces in the market. For convenience sake, I will treat it as price pressure. The first two mechanisms result in an adjustment *of* the bid- and ask-price (*external* price pressure), while acting on the bid-ask spread causes price pressure *between* the bid- and ask-price (*internal* price pressure). However, all three mechanisms are useful for building up *real* pressure.

[36] When the demand curve is downward sloping, a demand or supply shift would result in upward or downward pressure. In theory, each participant can exercise pressure through this mechanism. There is empirical evidence for a downward sloping demand curve. Howbeit, this particular mechanism will probably not be very effective for manipulation because the decline is fairly small. *See, e.g.*, Avner Kalay, Orly Sade & Avi Wohl, *Measuring Stock Illiquidity: An Investigation of the Demand and Supply Schedules at the TASE*, 74 J. FIN. ECON. 461 (2004); Jeffrey Wurgler & Ekaterina V. Zhuravskaya, *Does Arbitrage Flatten Demand Curves for Stocks?*, 75 J. BUS. 583 (2002); Aditya Kaul, Vikas Mehrotra & Randall Morck, *Demand Curves for Stocks* Do *Slope Down: New Evidence from an Index Weights Adjustment*, 55 J. FIN. 893 (2000).

[37] In case a market buy order is nearly as large as, or larger than, the accumulation of the pending sell orders (to be sold at the current market price), the market buy order *dries* the supply at the current market price and causes upward pressure. The mirror image is a market sell order nearly as large as or larger than the accumulation of the pending buy orders (to be bought at the current market price). The market sell order *floods* the demand at the current market price and causes downward pressure. Each market participant could use this mechanism to exercise pressure. The success depends on two variables: (1) the size, volume, and speed of the orders; and (2) the liquidity of the market.

[38] A trader is able to cause an uptick or a downtick and change the market price. Let us assume that the bid price is $10 and the sell price is $11. If the market price is $10 and the following trade is a purchase, the market price will bounce to $11 (uptick). In case the market price is $11 and the next trade is a sale, the market price will bounce back to $10 (downtick). The pressure between the bid and asks price is limited to the size of the bid-ask spread ($1).

III. THE NORMATIVE SIDE OF PRICE PRESSURE

A. The "Unsupported Price Pressure" Standard

Section II dealt with the relationship between transactions, price pressure, and price changes. Trading behavior still needs a normative delineation. The following analysis concentrates on the normative side of price pressure, showing that manipulation can be defined as "exercising unsupported price pressure."

1. Unsupported Price Pressure

Government decision makers frequently fail to provide a clear and immediate cause to regulate manipulation. According to one often used reason, they would have to control the deliberate interference with the free play of supply and demand in the security markets.[39] Another reason for counteracting manipulation is the prevention of a loss of confidence in market operations.[40] It could also be that manipulators are active and other market participants lose confidence. Both claims, however, lack serious empirical proof. Apart from that, even when government decision makers have compelling reasons to prohibit manipulation, they often design broad and general prohibitions, lacking a clear normative distinction between legal and illegal behavior. Some definitions rest primarily on poorly defined effects of trading in order to delimit illegal behavior.[41] Other definitions use intent to mark off the

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[39] H.R. REP. NO. 73-1383, at 11 (1934) ("The idea of a free and open public market is built upon the theory that competing judgments of buyers and sellers as to a fair price of the security brings about a situation where the market price reflects as nearly as possible a just price."); Proposal for a Directive of the European Parliament and of the Council on Insider Dealing and Market Manipulation (Market Abuse), COM (2001) 281 def., 3 ("Fair prices result from individual analysis by investors of all public information. Prices resulting from manipulation are set at another level, creating economic advantage solely for the manipulators, but damaging the interests of all other investors.").

[40] H.R. REP. NO. 73-1383, at 10 (1934) ("To insure to the multitude of investors the maintenance of fair and honest markets, manipulative practices of all kinds on national exchanges are banned."); Directive of the European Parliament and of the Council on Insider Dealing and Market Manipulation (Market Abuse), COM (2001) 281 def., 2 ("Market abuse not only increases the cost for companies to finance themselves but also harms the integrity of financial markets and public confidence in securities and derivatives trading.").

[41] *See, e.g.*, Sec. Exchange Act of 1934, 15 U.S.C. § 78(b); Sec. Exchange Act of 1934, 17 C.F.R. § 240.10b-5; Section 1(2)(a) DMA 2003; Section 1041A CA 2001. *See supra* notes 10, 11, 14 and 18 (providing the full text of the provisions). The US provisions apply to "any manipulative or deceptive device or contrivance' and 'any act . . . which operates . . . as a fraud or deceit upon any person." The European definition covers trades creating an

supposed harmful behavior.[42] In this way, the regulator exercises large discretionary powers to regulate the market, which may deter market participants from executing trades that would otherwise enhance welfare. These prohibitions are not completely inadequate, but there is an opportunity to narrow the prohibitions, communicating clearly to the market what kind of behavior is illegal.

Few forms of trading result in societal costs. These trades qualify as manipulative. Trades not resulting in societal costs are exempted. But, when might trading bring about societal costs? One of the differences between a manipulator and a "normal" trader is the quality of the price pressure. Just as information differs in quality, price pressure can be of high or low quality.[43] I will use the term "unsupported price pressure" for low-quality price pressure. A trader exercises unsupported price pressure when he lacks sufficient information to justify the price pressure. Logically, I will use the term "supported price pressure" for high-quality price pressure. Traders exercise supported price pressure when they have sufficient information to justify their price pressure. Unsupported price pressure *might* create societal costs, because the price impact is partially or completely unfounded. Conversely, it is reasonable to assume that supported price pressure does not result in societal costs, because this trading contributes to the efficiency of prices. Therefore, manipulation presupposes unsupported price pressure, which is a necessary condition.

If a regulator investigates a suspect, he needs at least compelling evidence that the suspect possessed insufficient information. The support of the price pressure should be derived from two variables: (1) the extent of the price pressure and (2) the extent of the justifiable price pressure. If the trader's price pressure is larger than the justifiable price pressure, he produces unsupported price pressure. The trader's price pressure minus the justified price pressure equals the extent of the unsupported price pressure. Otherwise, if the trader's price pressure is

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artificial or *abnormal* price, while the Australian definition is limited to trades resulting in an *artificial* price.

42 *See, e.g.*, § 9(a)(2) of the Sec. Exchange Act of 1934, 15 U.S.C. § 78i(a) (2000). This Section applies to trading, whether or not resulting in a price change, if it is *for the purpose* of inducing the purchase or sale of such security by others; *see also* the definition proposed by Fischel and Ross, requiring bad intent.

43 George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488 (1970). Akerlof's seminal paper on the market for lemons shows that the production of low-quality information might result in societal costs. In the same way low-quality price pressure can be costly and be a reason for regulation.

equal to, or less than, the justifiable price pressure, he produces supported price pressure.

Imagine a trader who executes transactions and causes price pressure as large as +$5. He exercises: (1) unsupported price pressure when his underlying information justifies, *e.g.* a price pressure of $0; (2) partly supported price pressure (+$3) and partly unsupported price pressure (+$2) when his underlying information justifies a price pressure of +$3; or (3) supported price pressure when his information justifies a price pressure of +$5 or +$8. A trader, who exercises price pressure as large as the justified price pressure, loses his complete information privilege; while a trader, who exercises price pressure smaller than the justified price pressure, protects at least a part of his information. The foregoing is depicted in the following three equations:

(1) trader's price pressure > justifiable price pressure → unsupported price pressure

(2) trader's price pressure = justifiable price pressure → supported price pressure

(3) trader's price pressure < justifiable price pressure → supported price pressure

The proposed approach to distinguish between manipulators and "normal" traders relates to the empirical approach to make this distinction. The empirical analysis of manipulation by measuring Cumulative Abnormal Returns ("CAR") is based on the following reasoning. If supposed manipulators have inflated the price and the price remains high over time, the traders were most likely informed and not manipulative. Conversely, if the price drops, the traders were most likely manipulators. The proposed standard concentrates on the manipulator *exercising* unsupported price pressure, while the CAR standard centers on arbitrageurs *removing* a created mispricing. Obviously, the legal definition of manipulation should be based on the proposed standard and not on the CAR standard, simply because the legal definition ought to focus on the suspect's behavior, whereas the empirical approach covers the arbitrageur's behavior. The following example illustrates the difference between the "unsupported price pressure" standard and the CAR standard.

Envision an informed trader who has information that points to future price pressure of +$3 and exercises *direct supported* price pressure of +$3 at *t*. Fifty traders observe this behavior and follow suit. Each

trader exercises *indirect unsupported* price pressure of +$0.04 at *t+1*. In this situation arbitrageurs do not reverse the +$3 contribution of the informed trader. On the other hand, they will remove the +$2 contribution of the other traders. Even though the informed trader exercised supported price pressure, the analysis shows some CAR due to removal of the overreaction. Under the proposed standard, the informed trader is no manipulator. Conversely, according to the CAR standard, the informed trader may qualify as a manipulator. It is important to note that a trader who exercises supported price pressure is not responsible for causing *indirect unsupported* price pressure. Furthermore, the individuals are not blamed, as each exercised *irrelevant* unsupported price pressure.

2. Factual Assessment

The procedure to determine whether a suspect has exercised unsupported price pressure includes the following steps. The regulator approximates the suspect's price pressure based on the trading volumes, and polishes the estimate by taking into account the characteristics of the suspected transactions. The regulator then evaluates the suspect's information position at the moment of trading. Having translated this information position into the justifiable price pressure, he can decide whether the suspect has exercised unsupported price pressure or not. In principle, the discovery of the information position requires hard evidence. Also, the conversion of the information position to the justified price pressure asks for an adequate and consistent argumentation. However, how can a regulator apply the "unsupported price pressure" standard in practice? The next paragraphs define the concepts of "information" and "non-information." They further describe the method to discover the suspect's information position and the way to translate the information position into the extent of the justified price pressure.

The application of the "unsupported price pressure" standard depends in large part on the delineation of the concept "information." Henceforth, "information" is all information that points to: (1) an undervaluation or overvaluation of certain shares; or (2) a change of the fundamental value of certain shares. If shares of ABC are trading at $18, and the trader has information that their fundamental value is $20, the shares are undervalued and the trader is allowed to exercise price pressure between $0 and +$2. On the other hand, a trader could have information that points to a change of the fundamental value of certain shares. For example, a trader is the first to know that company ABC will

lose its successful CEO, probably decreasing the fundamental value of the shares with -$1. In this situation, the trader is allowed to exercise price pressure between $0 and -$1.[44] It is important to note that the trader can legitimately move the price away from the fundamental value as long as he exercises supported price pressure. The trader could legitimately sell shares and move the price from $18 to $17, even when the fundamental value of the shares is $20, because he discounts new information in the stock price.

Another important aspect of the "unsupported price pressure" standard is the distinction between "information" and "non-information." Consider the following three situations. First, traders sometimes believe they have information that is not yet discounted in the stock price, while in fact it has been discounted in the stock price. Second, traders sometimes receive information, which is discounted in the stock price shortly after. In both situations, the trader has no information and is not allowed to exercise price pressure. Third, two traders could receive identical information at *t*, after which they both exercise price pressure at *t+1*. If the traders receive information pointing at future supported price pressure of +$2, their combined price pressure should be +$2 or less. The more the information ages, the smaller the justified price pressure. So, traders should keep in mind whether their information by any chance ages and becomes non-information, influencing the extent of justified price pressure.

How does the regulator then discover the information position? In theory, the regulator should determine what kind of information circulated *within the complete market*, in all states of the world, and what information has reached the suspect. Obviously, the regulator is hardly able to assess the suspect's information position at the moment of trading.[45] Certainly, he is faced with a formidable task. Hence, he will have to gather a lot of soft evidence about the probability of an insufficient information position, most likely deriving an estimate of the

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[44] This trader could of course violate the prohibition on insider trading. Nevertheless, a trader discounting inside information into the stock price contributes to efficiency and cannot be qualified as a manipulator.

[45] *See* Yadlin, *supra* note 3, at 849 ("Thus, very rarely will a fact-finder be able to determine whether or not a particular scheme was based on information."). Indeed, we know from the enforcement of insider trading laws that the suspect's information position is hard to prove. The regulator should determine what kind of information circulated *within the company* and what information might have reached the insider. He could, for example, use minutes from corporate meetings, reconstructing the information position of the insider.

supposed information position from the characteristics of the trades and the interests of the trader, an approach that includes a high risk of Type I errors. There are situations in which a regulator is not able to determine the suspect's information position, although he is able to conclude that the suspect's information position was most likely insufficient to justify the exercised price pressure. For example, this occurs where a market participant causes an exceptional price increase of at least ten percent or where a market participant shows extraordinary behavior that goes with a significant expected profit.

In case the regulator is able to derive the suspect's information position, the next step is the conversion of the suspect's information position into the justified price pressure. A regulator has to provide a well-argued estimate of justified price pressure, in the absence of a definite algorithm to calculate this value. A weak information position justifies small price pressure, just as a strong information position justifies a large price pressure. If an uninformed trader merely wants to gamble, having no relevant information, the extent of the justified price pressure is $0. If, however, an insider knows that the price is going to rise, the justified price pressure is relatively large. People may find the analysis of the information position and the conversion of the information position problematic. As already stated, the regulator is often not able to determine the precise extent of the unsupported price pressure, although he has opportunities to legitimately conclude that a trader most likely has exercised unsupported price pressure.

3. Some Improvements

This Article is based on the dichotomy of supported and unsupported price pressure. The difference lies in the quality of the price pressure. Most other papers distinguish between informed traders and uninformed traders who cause a price change. One should not confuse both approaches. First, the proposed standard clearly isolates price pressure from noticeable price change. In this way, the focus is on the contribution of the suspect and not on the outcome of the market. Second, the standard is applicable to assess both uninformed traders, who exercise price pressure, and informed traders, who exercise more price pressure than justified price pressure. Finally, the standard allows us to determine the extent of the unsupported price pressure, because it distinguishes between exercised and justified price pressure. Consequently, it is possible to introduce a materiality standard. Let us now examine the differences between the "unsupported price pressure" standard and a few other standards put forward in the past.

Yadlin[46] and Easterbrook[47] point out that manipulation relates to the trader's information position. Accordingly, a trader, who produces a price change while he has no information, might be a manipulator. Even though this approach has its merit, it is not explicit. The authors ignore the difference between price change and price pressure, making it hard to determine the extent of the price pressure. Moreover, they focus on uninformed traders who influence the price, ignoring informed traders who exercise unsupported price pressure. Their approach is sufficient when a trader was partially or completely responsible for a price change, while being *un*informed at the moment of trading. However, the approach is insufficient when the same trader was in possession of an information set. In that case, one should first determine the extent of the exercised and justified price pressure before being able to judge the quality of the price pressure. In addition, when a trader has exercised unsupported price pressure, both the exercised and the justified price pressure are necessary to determine the extent of the unsupported price pressure.

The papers of Gastineau & Jarrow[48] and Fischel & Ross[49] linked manipulation with uninformed profits. Again, this approach has merit, although one should develop the idea so that it may be implemented. For this purpose, the standard of unsupported price pressure is relevant. The following example illustrates why the extent of the exercised and justified price pressure are essential to estimate the uninformed profit. Consider a trader who possesses some information, knowing that the price of ABC shares will rise from $20 to $23. Next assume that this trader buys 1,000 shares of ABC and causes a price rise from $20 to $25 per share. Since the trader's justified price pressure is +$3 and the trader's exercised price pressure is +$5, the supported price pressure is

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46 *Id.* at 842 ("I distinguish between informed and uninformed manipulators. Both types of manipulators trade for the purpose of affecting the market price. But informed manipulators are privy to information that leads them to believe that the market has mispriced the stock and that their effect on the market will better reflect the stock's value.").

47 Frank H. Easterbrook, *Monopoly, Manipulation, and the Regulation of Futures Markets*, J. BUS. L. 103, 118 (1986) ("The essential distinction is between secret strategies necessary to capture the value of new information about underlying conditions and secrecy designed to cause prices to diverge from those that reflect the underlying conditions.").

48 Gastineau & Jarrow, *supra* note 3, at 41 ("[I]n the *absence* of information that suggests a trading strategy will yield a positive, risk-adjusted return . . . , the trader undertakes it anyway, expecting to profit from advantages related to size and intertemporal differences in market impact.").

49 Fischel & Ross, *supra* note 3, at 510 ("[T]he resulting profit comes solely from the trader's ability to move prices and not from his possession of valuable information.").

+$3 and the unsupported price pressure is +$2. This is sufficient to determine both the extent of the informed and uninformed profit. Assume that the trader exercises the aforementioned price pressure right after he has signed a contract with another party to sell 100,000 shares of ABC in a person-to-person deal, while the implicit and explicit costs of exercising the price pressure are negligible. Under these circumstances, he would have been able to reap an informed profit of $300,000 and an uninformed profit of $200,000, both on the contractual sale.

B. The Costs of Unsupported Price Pressure

The preceding Section illustrates why manipulation should be defined as "exercising unsupported price pressure." This Section explores the dynamics of unsupported price pressure. Unsupported price pressure causes welfare shifts between uninformed traders on the one hand, and corrective traders or manipulators on the other. These welfare shifts might drive away uninformed traders from the financial markets, resulting in reduced liquidity and societal costs. The following analysis explains that a prohibition of manipulation, which is in line with the "unsupported price pressure" standard, could discourage unsupported price pressure and, as such, increase social welfare.

1. The Framework

A model is used to analyze effects of idealized market transactions. The model includes four archetypical traders: (1) a manipulator; (2) a corrective trader; (3) an informed trader; and (4) an uninformed trader. I will give a short description of each of the traders and the quality of their price pressure.

In a standard manipulation scheme, the manipulator exercises upward *unsupported* price pressure to raise the price, thereby creating an informational privilege. The manipulator's exclusive knowledge that the price is too high gives him an advantage over the other market participants. The manipulator then sells a large amount of shares at the inflated price, using his informational privilege. He will try to avoid or limit the exercise of downward *supported* price pressure, since he would otherwise discount information in the price and lose his informational privilege. A successful avoidance results in a profit.

Corrective traders compete with a manipulator from the moment he has exercised upward unsupported price pressure. Their only goal is to discover manipulators and sell shares at the inflated price, thereby trying to minimize the exercise of downward *supported* price pressure and

maximize their profit. Informed traders are the first to receive new information about the future of the company or market, and will trade shares before other traders will be in the position to do so. They, however, do not react to manipulators and manipulative schemes. Informed traders endeavor to minimize the *supported* price pressure and maximize their profit.

Uninformed traders do not have any information about the future of the company or market, but still trade on a regular basis for various reasons, for example, the investment of capital or the transfer of risk.[50] The uninformed traders limit the size of their transactions and do not create any relevant price pressure. They will sometimes trade with other uninformed traders and sometimes with the manipulator, corrective traders, or informed traders. The uninformed traders, on average, play even when they trade with each other. Otherwise, they will lose.

The formalization is as follows. The pre- and post-manipulation price at t and $t+i$ can be any positive number. The model distinguishes between a manipulator exercising upward unsupported price pressure (M) and downward supported price pressure (O). A manipulator first exercises M, raising the price before he unloads his shares at the inflated price, and possibly exercises O. Furthermore, corrective traders exercise downward supported price pressure (C), informed traders exercise either downward or upward price pressure (I), and uninformed traders exercise no or negligible price pressure (U). M, O, C, I, and U are either positive for upward price pressure, negative for downward price pressure, or zero for no price pressure. The relation is depicted in the following equation:

$$Stockprice_{t+i} - Stockprice_t = M + O + C + I + U = \sum_{h=1}^{i} m_{t+h} + \sum_{h=2}^{i} o_{t+h} + \sum_{h=2}^{i} c_{t+h} + \sum_{h=1}^{i} i_{t+h} + \sum_{h=1}^{i} u_{t+h}$$

M, I, and U start at $t+1$, while O and C will not start before $t+2$. As a rule, if M is positive, O and C are negative, and vice versa. It is important to note that m_{t+1} is always larger than or equal to o_{t+2} and c_{t+2}, while m_{t+1} can be smaller than o_{t+3} and c_{t+3}. The sum of m_{t+1}, m_{t+2}, o_{t+2}, and c_{t+2} determines the maximum of o_{t+3} and c_{t+3}. The larger m_{t+1} and m_{t+2} and the smaller o_{t+2} and c_{t+2}, the larger o_{t+3} and c_{t+3}. This relation is depicted in the following equation:

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50 *See, e.g.*, HARRIS, *supra* note 7, at 176-200.

$$\left|\sum_{h=1}^{i} m_{t+h} + \sum_{h=2}^{i} o_{t+h} + \sum_{h=2}^{i} c_{t+h}\right| \geq |o_i| + |c_i|$$

2. The Analysis

The main question is to what extent a manipulator, defined as a trader who exercises unsupported price pressure, creates societal costs. The goal is to examine the most relevant potential costs, not to cover all conceivable costs. A manipulator executes either one-sided trades or two-sided trades. In the case of one-sided trades, he only buys shares and exercises upward unsupported price pressure. So, the manipulator exercises *M*, but not *O*. In case of two-sided trades, the manipulator first buys shares, exercising upward unsupported price pressure, and then sells shares to take advantage of the unsupported price pressure. The manipulator exercises *M* and possibly *O*. Both one-sided and two-sided trades cause welfare shifts between uninformed traders and corrective traders. In the case of two-sided trades, the manipulator further sells shares at the inflated price and benefits at the expense of uninformed traders, provided that he minimizes *O*. All these welfare shifts might drive away uninformed traders from the financial markets, resulting in reduced liquidity and societal costs. The relation between unsupported price pressure and societal costs will be discussed in more detail in the following paragraphs.

a. One-sided Trades and Welfare Shifts

Few manipulators buy shares and exercise upward unsupported price pressure without selling shares to take advantage of the unsupported price pressure. It is costly to create unsupported price pressure and, therefore, taking a profit, by unloading a large number of shares at the inflated price, is the rational outcome. Nevertheless, there will always be some manipulators who miss their trading opportunity. One can think of several scenarios in which this occurs. First, a manipulator who has exercised unsupported price pressure, and initially is in the position to make a profit by unloading a large amount of shares, may pull back because the opportunity disappears quickly or the scheme appears to be too risky or too transparent. Second, a trader who exercises unsupported price pressure may be unaware that he actually did so and consequently will not think of unloading shares at the inflated price. Such an ignorant trader might qualify as a manipulator, especially when his ignorance is reprehensible and the extent of the unsupported price pressure is large. Notwithstanding the cause of one-

sided trades, the trader produces: (1) extra volatility and (2) extra information asymmetries. We will discuss both of these effects.

i. Extra Volatility

Adding volatility to the market has its own welfare effects. A manipulator will either increase or decrease the risk of a single stock. If unsupported price pressure results in extra volatility, it increases the risk. Conversely, if unsupported price pressure mitigates the price variance, it decreases the risk.[51] There are three relevant situations. First, the manipulator exercises upward *M*, while there is no other price pressure, thereby *causing* volatility by definition. Second, upward *M* is *in line with* the accumulation of *C* and *I*. For example, *M* is +$2, while *C* is +$3 and *I* is -$1. In this situation, the manipulator *increases* volatility. Third, upward *M* is *contrary to* the accumulation of *C* and *I*. For example, *M* is +$2, while *C* is -$3 and *I* is -$1. The manipulator mitigates the volatility; however, he does this *temporarily*. The manipulator will shortly afterward exercise *O* or induce corrective traders to exercise *C*, increasing volatility. Therefore, the conclusion is that on average a manipulator raises volatility.

ii. Costs of extra volatility

What happens after a manipulator has exercised *M*? Traders who buy at an inflated price transfer wealth to investors who sell at an inflated price. This is not automatically a problem. A manipulator will not create costs to risk neutral traders if they are as likely to lose from buying at a deflated price as they are to gain from selling at an inflated price. Further, the manipulator will not thwart risk-averse traders, provided that they have a well-diversified stock portfolio. According to modern portfolio theory, investors with a well-diversified portfolio are able to exclude unsystematic risk, which is risk associated with individual assets. Nevertheless, a manipulator creates costs to risk-averse traders with a poorly diversified portfolio. Hence, the manipulator causes extra volatility and drives away this group of traders from the financial markets. The reduction in liquidity could result in societal costs.[52]

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[51] *Cf.* Marcel Kahan, *Securities Laws and the Social Costs of "Inaccurate" Stock Prices*, 41 DUKE L.J. 977, 1026 (1992).

[52] Unsupported price pressure might have an influence on the size of the bid-ask spread, because liquidity providers discount the stock price volatility and the extra risk. *See* Hans

iii. Extra information asymmetries

A manipulator does not create only extra volatility, but also extra information asymmetries. Indeed, a manipulator inflates the stock price and consequently creates information asymmetries between himself and the uninformed market segment. The idea that a manipulator establishes an informational advantage is straightforward. Consider a manipulator who exercises upward *M* of +$5 while there are no other forms of price pressure, thereby slowly inflating the price from $10 to $15. The manipulator has created an informational advantage: he knows that his own activities are the source of the price rise, while the uninformed market segment lacks this information. Even though the manipulator endeavors to protect his information privilege as long as possible, he cannot prevent that some corrective traders in the end will receive a comparable informational privilege, especially when he is not able to fully camouflage his identity.

iv. Costs of extra information asymmetries

What happens after a manipulator has exercised *M*? As the manipulator buys shares at a price above the fundamental value to exercise unsupported price pressure, he attracts relatively more corrective traders than uninformed traders. Thus, comparatively speaking, a manipulator *buys* more shares from *corrective* traders than from *uninformed* traders, benefiting the corrective traders more than the uninformed traders. If the manipulator, after having exercised unsupported price pressure, does not unload a large amount of shares, corrective traders replace the manipulator, selling shares to the uninformed traders at the inflated price until the price returns to the original level. The conclusion is that a manipulator creates extra information asymmetries and benefits corrective traders vis-à-vis uninformed traders. As a result, they drive away uninformed traders from the financial markets. The reduced liquidity may again result in societal costs.[53]

R. Stoll, *Market Microstructure*, *in* HANDBOOK OF THE ECONOMICS OF FINANCE: VOL. 1A, CORPORATE FINANCE 562-63 (George M. Constantinides, Milton Harris & Rene M. Stulz eds., 2003).

[53] Informational asymmetries are an explanation for the size of the bid-ask spread. *Id*. at 563. Because information asymmetries increase the bid-ask spread, some traders might leave the market and reduce the liquidity.

b. Two-sided Trades and Welfare Shifts

Most manipulators execute both buy and sell transactions to make a profit. The question is to what extent two-sided trades create societal costs. The analysis is limited to a manipulator who first purchases shares to inflate the price and then sells shares to profit from the inflated price. This will either lead to symmetric or asymmetric price pressure. Envision a manipulator who purchases 1,000 shares and inflates the price from $10 to $15, while there are no other forms of price pressure. When he sells 1,000 shares and the price returns to $10, it is a case of symmetric price pressure. On the other hand, if he sells more than 1,000 shares before the price returns to $10, it is a situation of asymmetric price pressure. The analysis ignores manipulators who create symmetric price pressure, as they will not make any profit and do not produce any other costs than already discussed. Let us distinguish between a manipulator who exercises asymmetric price pressure: (1) in the same financial market and (2) in different financial markets. We will discuss how traders can make a profit and if this results in societal costs.

i. Two-sided trades in the same market

The manipulator first buys shares, creating large upward unsupported price pressure, and then sells shares, creating little downward supported price pressure. Imagine the following example. A manipulator buys 5,000 shares and exercises upward M of +$1, whereupon he sells 10,000 shares and exercises downward O of -$1. Obviously, the upward price pressure exceeds the downward price pressure. For expositional clarity, we assume that the manipulator pays on average, an extra $0.55M$ per share and receives an extra $-0.45O$ per share, that is, he pays an extra $0.55 per share and receives an extra $0.45 per share.[54] The manipulator will face a payout of (-$0.55 * 5,000) + ($0.45 * 10,000) or $1750. If the manipulator competes with corrective traders, his payout will be (-$0.55 * 5,000) + ((1-$x$) * $0.55 * 10,000), where (1-x) is a measure of the power to capitalize M.

[54] This assumption is based on the following example. The price and the fundamental value of a share is $5. A trader, for example, buys 500 shares at $5.1, 500 shares at $5.2, 500 shares at $5.3, and so on until the price reaches $6. He will then sell 1,000 shares at $5.9, 1,000 shares at $5.8, 1,000 shares at $5.7 and so on until the price reaches $5. *Cf.* HARRIS, *supra* note 7, at 270-73.

ii. The likelihood of societal costs

In theory, a manipulator is able to make a profit at the expense of uninformed traders. This could drive away uninformed traders from the financial markets, reducing market liquidity and creating societal costs. It remains to be seen whether manipulators in practice are able to make a profit. According to the cogent analysis of Fischel and Ross, making a profit may be unlikely. In practice, *M* is usually counterbalanced by *O*.[55] Even though Thel largely endorses the principle that profitable manipulation is difficult, he rightly points out the importance of under and overreactions.[56] Nevertheless, as long as empirical research has not produced profound insights in the causes and circumstances of these mixed reactions, it is hard to draw any conclusions about market reforms or regulation. The idea that manipulators cannot systematically reap profits through contrary trades in the same market is supported by recent empirical studies on the information content of suspected trades. These studies show that many so-called manipulative transactions were probably informed trades.[57] However, there is also evidence that pump and dump schemes might occur and be profitable.[58] Considering the mixed evidence, it is best to conclude that there is not enough proof of manipulative profits and, therefore, societal costs.

iii. Two-sided trades in different markets

The Article started with an example of a trader who combines trading on the exchange, and deal making outside the exchange. If the manipulator buys 5,000 shares of ABC on the exchange and exercises *M* of +$1, while contractual rights allow him to sell one million shares off the exchange at the inflated price, he is able to make a profit. This is true as long the trader minimizes the costs of exercising *M* and keeps *O* at a minimum. Again, we assume that the manipulator pays on average an extra 0.55*M* per share. However, since he sells shares in a person-to-person deal, he does not cause any *O* during the sale. Under these circumstances and assumptions, the manipulator makes a profit of (-$0.55 * 5,000) + ($1 * 1 million) or $997,250. The trader has to consider

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55 Fischel & Ross, *supra* note 3, at 517-19.

56 Thel, *supra* note 7, at 261-67.

57 Jiang, Mahoney & Mei, *supra* note 8, at 147; *see also* Mahoney, *supra* note 8, at 343 (finding no evidence that stock pools were engaged in unsupported manipulation).

58 *See, e.g.*, Asim I. Khwaja & Atif Mian, *Unchecked Intermediaries: Price Manipulation in an Emerging Stock Market*, 78 J. FIN. ECON. 203 (2005); *see also* Aggerwal & Wu, *supra* note 2, at 1916.

the influence of corrective traders. If the manipulator inflates the price of ABC shares and corrective traders deflate the price before the manipulator is able to capitalize *M*, his payout will be (-$0.55 * 5,000) + ((1-*x*) * $1 * 1 million), where (1-*x*) is a measure of the power to capitalize *M*. In a similar way, the trader could combine trading on different exchanges. He might trade ABC shares close to the expiration date of ABC options to influence the price of the latter and, therefore, make a profit.

iv. The likelihood of societal costs

It is reasonable to believe that manipulators in practice are able to make a profit by trading in different markets: buying in a market where prices are dynamic and selling in a market where prices are static. As the manipulator makes a profit, the uninformed market incurs a loss. Consequently, the manipulator might drive away uninformed traders and reduce liquidity, creating some societal costs.[59] Fischel and Ross, as well as Thel and Yadlin, have described several real-life situations and case law in which manipulators may have benefited.[60] The authors agree that manipulation is occasionally profitable. According to Fischel and Ross, contract-based manipulation is "not clearly self-deterring because the gains from triggering the contractual right could outweigh the losses incurred by the alleged manipulator at the time of sale."[61] Thel concludes that "contracts in which rights are contingent upon reported security prices create tempting opportunities for manipulation."[62] Likewise, Yadlin believes "there are circumstances in which manipulation is profitable."[63] Overseeing the real-life situations and case law, it is plausible that manipulators sometimes make a profit and therefore cause societal costs.

The objective of the foregoing discussion was to show that a trader who exercises unsupported price pressure may create societal costs, even when he does not profit from trading. Thus a prohibition on

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[59] Since I aim to define manipulation and not to discuss the justification of regulation, I will ignore the fact that they disagree about the necessary policy implications. Fischel and Ross argue that the societal costs of regulation are high, making the solution worse than the problem. Fischel & Ross, *supra* note 3, at 553. Thel believes that regulation will have a necessary deterrent effect. *See* Thel, *supra* note 7, at 296-98.

[60] Fischel & Ross, *supra* note 3, at 527-34; *see also* Thel, *supra* note 7, at 247-61.

[61] Fischel & Ross, *supra* note 3, at 523.

[62] Thel, *supra* note 7, at 261.

[63] Yadlin, *supra* note 3, at 841.

manipulation may discourage unsupported price pressure, and as such increase social welfare.

IV. POLICY IMPLICATIONS

A. The Definition of Manipulation

Having introduced an improved definition of manipulation, "exercising unsupported price pressure," the focus is on some contemporary thoughts about prohibitions on manipulation. The first policy implication is the design of future prohibitions on manipulation. The second policy implication is accentuating current prohibitions on manipulation by using the "unsupported price pressure" standard.

1. Future Prohibitions

At some stage, legislators in countries without a prohibition on manipulation in place or in countries with an intention to change existing prohibitions may want to explore the various options to design or change their existing statutes. I do not claim that countries should expand their legal systems with a prohibition, but if they prefer to do so, they should design policy in line with the "unsupported price pressure" standard. The most elementary prohibition bans traders who execute transactions that result in unsupported price pressure. The legislator then has to decide if and how it wants to restrict the application of the prohibition. It could opt for: (1) a restricted prohibition, indemnifying traders who exercise unsupported price pressure and do not expect to benefit (as discussed below); (2) a materiality standard, excluding minor forms of unsupported price pressure (Section IV.B); and/or (3) a *mens rea* element, excluding traders who can be declared innocent (Section IV.C).

A legislator has to choose between a broad and a restricted prohibition. The broad prohibition includes all traders who exercise unsupported price pressure. The core of the prohibition would be as follows: *it is prohibited to execute transactions that result in unsupported price pressure*. The restricted prohibition excludes traders who exercise unsupported price pressure and do not expect to benefit. The core of the prohibition would provide: *it is prohibited to execute transactions that result in unsupported price pressure and go together with an expected unsupported profit*. The advantage of the broad prohibition is that it applies to traders who exercise large unsupported price pressure and create significant societal costs, even if they are not in the position to make a profit (Section III.B.2.a). Because of this advantage, it is reasonable to believe that

legislators will opt for a broad prohibition. The remainder of this Article is based on this assumption.

2. Contemporary Prohibitions

The next question is how legislators can accentuate Section 10(b) of the SEA, Rule 10b-5, Section 9(a)(2) of the SEA, Section 1(2)(a) DMA 2003, and Section 1(2)(a) DMA 2003. Section 10(b) of the SEA and Rule 10b-5 applies to "any manipulative or deceptive device or contrivance" and "any act . . . which operates . . . as a fraud or deceit upon any person."[64] Both provisions could be more focused in the context of manipulation. If the regulator interprets the provisions in line with the "unsupported price pressure" standard, he would clearly communicate to the market that traders are allowed to influence the stock price as long as they discount new information in the price and exercise supported price pressure. So, a trader would only violate Section 10(b) of the SEA or Rule 10b-5 if he at least exercises unsupported price pressure. Besides, the regulator could take into account the extent of the unsupported price pressure and the culpability. Consequently, traders do not have to err on the side of caution and are encouraged to enter into welfare-enhancing transactions.

Section 9(a)(2) of the SEA refers to transactions raising or depressing the price of a security.[65] A first shortcoming of the prohibition is that it applies to both transactions resulting in unsupported price pressure and supported price pressure. If a trader executes transactions, exercises supported price pressure, and causes the price to change, he technically violates the prohibition. Even though the prohibition is pretty broad at face value, it should be interpreted narrowly.[66] For example, the court in *Trane Co. v. O'Connor Securities* concluded that a risk arbitrageur was allowed to cause a price change, because O'Connor "was convinced that Trane was a ready target for unusual corporate activity in the form of a

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64 *See supra* notes 10, 11 for a more complete text of Section 10(b) and Rule 10b-5, respectively.

65 *See* Thel, *supra* note 7, at 221 n.17 (referring to "buying a security for the purpose of increasing the reported price or selling a security for the purpose of decreasing the reported price").

66 H.R. REP. NO. 792, at 20 (1934) ("Of course, any extensive purchases or sales are bound to cause changes in the market price of the security. If a person is merely trying to acquire a large block . . . or desires to dispose of a big holding, his knowledge that in doing so he will affect the market price does not make his action unlawful"); *cf.* S. REP. NO. 792, at 17 (1934).

merger, take over or tender offer."[67] Even though the application of Section 9(a)(2) of the SEA is limited through case law, this has not established a crystal clear distinction between supported and unsupported price pressure. One recommendation would be to restrict the application of the prohibition to traders who exercise unsupported price pressure.

A second shortcoming of Section 9(a)(2) of the SEA is that it only applies to traders who *create* or *reinforce* a price change and not to traders who *stabilize* the price or *mitigate* price changes. Consider a trader exercising upward unsupported price pressure of +$1, while the rest of the market exercises downward price pressure of -$1 respectively -$2. The trader does not raise or depress the price, but stabilizes the price and respectively mitigates the price change. If Section 9(a)(2) of the SEA is *replaced* with the "unsupported price pressure" standard, it would clearly cover transactions that raise or depress the price and transactions that stabilize the price or mitigate price changes. Section 9(a)(2) of the SEA could also be *interpreted* in line with the proposed standard, so that the provision is applicable to all traders who exercise unsupported price pressure, irrespective of the price influence. Anyhow, I prefer a replacement, as an extensive interpretation would be rather forced.

Section 1(2)(a) DMA 2003 applies to traders who execute transactions and bring the price to an abnormal level. The prohibition does not define "abnormal level" and there is no relevant secondary legislation. Besides, because the European prohibition is new, there is no relevant case law. At first glance, the prohibition applies to traders increasing the price from $10 to $11, provided that the price had previously been stable at $10 for a sufficient period of time. Nevertheless, an adequate prohibition allows traders who execute supported price pressure and bans traders who exercise unsupported price pressure. If Section 1(2)(a) DMA 2003 is interpreted in line with the "unsupported price pressure" standard, it would only be applicable to traders exercising unsupported price pressure. From an economic perspective, it is reasonable to say that a trader who exercises supported price pressure causes a normal stock price, while a trader who exercises unsupported price pressure causes an abnormal stock price.

There is another question to be answered. Let us assume that the regulator interprets Section 1(2)(a) DMA 2003 in line with the

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[67] Trane Co. v. O'Connor Sec., 561 F. Supp. 301, 304 (D.N.Y. 1983).

"unsupported price pressure" standard. Then the prohibition is definitely applicable to traders exercising unsupported price pressure and creating or reinforcing a price change. But it remains unclear whether the prohibition applies to traders exercising unsupported price pressure, thereby stabilizing the price or mitigating a price change. One could argue that a trader who stabilizes a price or mitigates a price change does not create an abnormal price. As already stated, the prohibition does not define "abnormal level" and there is no relevant secondary legislation. This leaves room for an extensive interpretation. It is advisable to interpret the prohibition in such way that it applies to traders exercising unsupported price pressure and thereby *affecting* stock prices.[68] By doing so, the regulator is able to take action in all situations, no matter whether traders *create*, *reinforce*, *stabilize*, or *mitigate* a price change.

Furthermore, legislators every so often design prohibitions to counteract traders who cause artificial prices.[69] Section 1041A CA 2001 refers to transactions that have the effect of creating an *artificial* price or maintaining it at a level that is *artificial*, while Section 1(2)(a) DMA 2003 prohibits transactions which bring or secure the price at an *artificial* level. Obviously, these prohibitions distinguish between traders creating non-artificial prices and traders creating artificial prices. The first group of traders acts legitimately, while the second group acts illegitimately. The problem remains that these prohibitions lack a precise delineation of "non-artificial price" versus "artificial price." As a result, a regulator is free to use the prohibitions to counteract various transactions, such as all transactions raising or depressing the price, uninformed transactions raising or depressing the price, transactions having the purpose of raising or depressing the price, or transactions moving the price away from the fundamental value.

Thus, chances are that the regulator falsely employs Section 1041A CA 2001 or Section 1(2)(a) DMA 2003 in situations of supported price pressure or erroneously ignores the prohibition in situations of

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[68] *See* Norman S. Poser, *Stock Market Manipulation and Corporate Control Transactions*, 40 U. MIAMI L. REV. 671, 731 (1986) (stating that a trader might manipulate even though he is not interested in *affecting* stock prices *as an end in itself*) (emphasis added); *see also* James H. Mathias, *Manipulative Practice and The Securities Exchange Act*, 3 U. PITT. L. REV. 7 (1936) (explaining that manipulation is "a planned effort to *affect* the market price of a security by artificial means") (emphasis added).

[69] *See* James W. Moore & Frank M. Wiseman, *Market Manipulation and the Exchange Act*, 2 U. CHI. L. REV. 46, 50 (1934) ("Manipulation leads to an *artificial* and controlled price.") (emphasis added).

unsupported price pressure. Both mistakes will most likely result in societal costs. If the regulator uses the prohibition in situations of supported price pressure, he falsely qualifies a legitimate trader as a manipulator, and when he ignores the prohibition in situations of unsupported price pressure, he erroneously indemnifies a manipulator. A regulator would reduce these risks by interpreting the prohibitions in line with the "unsupported price pressure" standard, so that the distinction between non-artificial prices and artificial prices is well-defined. The reasoning is as follows: in the event that a trader exercises supported price pressure, he creates a non-artificial price and is a legitimate trader. On the other hand, when the trader exercises unsupported price pressure, he creates an artificial price and might qualify as a manipulator.

B. The Materiality Standard

Section IV.A explains how legislators have to design a new prohibition on manipulation and how regulators could interpret current prohibitions. The following analysis concentrates on the extent of the unsupported price pressure. Prohibitions on manipulation may benefit from a materiality standard, just like the prohibition on information-based manipulation and insider trading does.

1. The Basics of the Materiality Standard

Economic and legal scholars often consider manipulation to be binary. Traders are either informed or uninformed.[70] If the trader is informed and influences the stock price, he is no manipulator. On the other hand, if the trader is uninformed and influences the stock price, he might qualify as a manipulator. This binary approach shows little similarities with real-life situations. Both informed traders and uninformed traders are able to exercise unsupported price pressure.

[70] Aggarwal & Wu, *supra* note 2, at 1937 ("[A] key to successful manipulation is the pooling of the manipulator with the truthful informed party. Hence, the manipulator needs either to be informed or to be able to credibly pose as being informed."); *see also* HARRIS, *supra* note 7, at 266 ("Bluffers behave as though they are informed speculators, and they hope that others will believe they are well-informed speculators, but they do not have well-founded opinions about values."); Yadlin, *supra* note 3, at 842 ("... I distinguish between informed and uninformed manipulators. Both types of manipulators trade for the purpose of affecting the market price. But informed manipulators are privy to private information that leads them to believe that the market has mispriced the stock and that their effect on the market will better reflect that stock's value."); Mahoney, *supra* note 8, at 354-55 ("An easily tested alternative to the manipulation hypothesis is that the pools were informed.").

Accordingly, the regulator cannot rely solely on the suspect's information position. He should always determine both the exercised price pressure and the justified price pressure before drawing any conclusions. Having determined both exercised price pressure and justified price pressure, he is able to calculate the extent of the unsupported price pressure. This step-by-step plan has been described in Section III.A.

Consider the following examples: if a trader exercises a price pressure of +$5, while in possession of information pointing at future supported price pressure of +$4.5, the unsupported price pressure is +$0.5; on the other hand, if the exercised price pressure is +$5 and the trader is in possession of information pointing at future supported price pressure of +$0.5, the unsupported price pressure is +$4.5. Clearly, the extent of the unsupported price pressure and, possibly, the size of the societal costs, vary significantly. It would be impractical and unwise to maintain a prohibition on manipulation that covers any situation of unsupported price pressure. There is no need to prohibit minor forms of unsupported price pressure, as the price influence and societal costs are negligible. Besides, traders may become reluctant to execute welfare-enhancing trades. This might have a negative impact on market operations.

In order to mitigate the negative consequences of an excessively strict regime, a materiality standard with respect to the extent of the unsupported price pressure is desirable. This should not be a formal and codified materiality standard as in most prohibitions on information-based manipulation and insider trading, but an informal and voluntary materiality standard to which the regulator could adhere. A formal materiality standard would result in a high burden of proof. The regulator should take into account the materiality of the unsupported price pressure in case he has a reliable estimate. A materiality standard would not only encourage traders to trade competitively, but also create systematic consistency. The U.S. and E.U. prohibitions on trade-based market manipulation currently do not have an explicit materiality standard, while the U.S. and E.U. prohibitions on information-based manipulation and on insider trading do.[71]

[71] The materiality standard would allow market participants to exercise little unsupported price pressure, even when they expect a profit. The reason is straightforward: companies and other market participants would otherwise become reluctant to execute transactions that result in little unsupported price pressure, while the costs of these trades

The application of a materiality standard, with an eye on the new definitions herein, would be as follows: the regulator first determines the extent of the exercised and justified price pressure, *e.g.* +$3 and +$2, before calculating the extent of the unsupported price pressure, that is, +$1; the regulator then decides what the minimal level of unsupported price pressure ought to be, for example, +$2. This normative judgment is usually based on a comparative assessment between the institutional interests and investor protection. If the regulator or judge strives for paternalistic securities regulation, he sets the minimal level very low. Conversely, if the regulator believes in liberal securities regulation, the minimal level is high. A market participant risks a violation of the prohibition on manipulation if the extent of the unsupported price pressure exceeds the minimal level. In the foregoing example, the unsupported price pressure of +$1 is irrelevant, considering the minimal level of +$2.

2. The Correction of the Materiality Standard

So far, for expositional clarity, the discussion has been limited to the materiality of the unsupported price pressure, ignoring the materiality of the unsupported profit. Immaterial unsupported price pressure, however, sometimes results in a large unsupported profit. A regulator, who adheres to the described materiality standard, does not take measures against immaterial unsupported price pressure, even when this goes together with a large unsupported profit. Such decision is undesirable, as the societal costs may be large. A regulator should look at both the extent of the unsupported price pressure and the size of the unsupported profit. In the end, it is not only the extent of the unsupported price pressure but also the size of the unsupported profit that is a good indicator of the societal costs. Therefore, the regulator should fine immaterial unsupported price pressure as long as it results in a large unsupported profit.

The regulator should investigate whether the unsupported price pressure was material. If this is not the case, he should assess whether any unsupported profit was material. However, should the regulator estimate the expected profit[72] or the realized profit?[73] There are a few

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are negligible. Likewise, companies are allowed to spread untrue or misleading information as long as it has a small impact, while management can legitimately use inside information as long as it is immaterial.

[72] Economic models of manipulation fulfill the rational actor assumption by using expected profit. *See, e.g.*, Gastineau & Jarrow, *supra* note 3, at 41 ("[T]he trader undertakes

practical arguments to focus on expected profit. Firstly, the proof of an expected profit is less complicated than the proof of a realized profit. Indeed, the regulator only has to prove that a trader exercised unsupported price pressure, while he could expect to profit from his action in the near future. Secondly, the prohibition would apply to both traders who attempt to manipulate the market and traders who are actually successful. Accordingly, this approach prevents a complex distinction between failing and successful manipulators. It is wise to perform just a *marginal* investigation with respect to the extent of the unsupported profit.

As already stated, an informal materiality standard with respect to the extent of the unsupported price pressure is desirable. Likewise, an informal materiality standard as to the unsupported profit could be beneficial. Consider the following example, in which both materiality standards are explained. Imagine a trader who buys 1,000 shares of ABC and exercises price pressure of +$0.5, so that the price of ABC shares rises from $20 to $20.5 per share. Assume that the trader has an informational privilege, knowing that the price should be $20.3. This means that the trader has exercised supported price pressure of +$0.3 and unsupported price pressure of +$0.2. If the regulator adheres to the materiality standard and qualifies the unsupported price pressure of +$0.2 as irrelevant, he cannot apply the prohibition and fine the behavior, except when the unsupported profit and the societal costs are large.

The regulator will have to assess the unsupported profit. Having exercised price pressure of +$0.5, the trader sells one million shares of ABC in a contractual person-to-person deal, while the price of this deal is derived from the price on the exchange. By exercising price pressure of +$0.5, the trader makes a total profit of $500,000. Assuming that the costs of exercising unsupported price pressure are small and that corrective traders were absent, one can calculate that the supported profit was as large as $300,000 and the unsupported profit $200,000. If the regulator has the ability to discover the extent of the unsupported profit, he then has to set a minimal level, depending on his ideas about the level of investor protection. He has a reason to fine the unsupported

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it anyway, *expecting to profit* from advantages related to size and intertemporal differences in market impact.") (emphasis added).

[73] *Cf.* Fischel & Ross, *supra* note 3, at 510 ("Manipulative trades could be defined as *profitable trades . . . the resulting profit* comes solely from the trader's ability to move prices and not from his possession of valuable information.") (emphasis added).

price pressure if the unsupported profit, which is $200,000, is larger than the minimal size of the unsupported profit, *e.g.*, when the minimum level is $50,000.

C. Mens Rea Elements

Having reduced the definition of manipulation to "exercising unsupported price pressure," there is a smaller role for the *mens rea* than many authors claim. Indeed, if a regulator would adopt the proposed standard, traders are protected as long as they execute supported price pressure. Nonetheless, the legislator is free to take up a *mens rea* element. By doing so, the legislator would protect traders who are not culpable of exercising unsupported price pressure.

1. The Relevance of the Mens Rea

Normally, a legislator develops a prohibition in a natural sequence. He might want to prohibit certain behavior because of the supposed societal costs. After a legislator has decided to do so, he could include a *mens rea* element, emphasizing culpability. Many legal systems prefer prohibitions that include a *mens rea* element. According to general consensus, one should keep punishment abreast of culpability. However, legal systems generally do not *require* this proportionality, especially when it comes to economic crimes. They allow for a "strict" liability regime, which does not take into account culpability.[74] Legislators regularly design prohibitions that cover harmful economic activities without any reference to the *mens rea*. The idea is that these activities have a large impact and as such should be prohibited, irrespective of the culpability of the defendant. Yet, even under such a strict liability-regime, offenders usually have the opportunity to make a claim to various *mens rea* defenses.

Since this Article shows that the legislator is able to *objectively* define manipulation, while legal systems allow legislators to design

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[74] *See, e.g.*, (for the U.S.) SANFORD H. KADISH AND STEPHEN J. SCHULHOFER, CRIMINAL LAW AND ITS PROCESSES 235-37 (2001) ("While the general rule at common law was that scienter was a necessary element in the indictment and proof of every crime . . . there has been a modification of this view in respect to prosecutions under statutes the purpose of which would be obstructed by such a requirement."); (and for the E.U.) *Saliabaku v. France*, 14 Eur. Ct. H.R. (1988) ("In particular, and again in principle, the Contracting States may, under certain conditions, penalise a simple or objective fact as such, irrespective of whether it results from criminal intent or from negligence. Examples of such offences may be found in the laws of the Contracting States.").

prohibitions according to "strict liability," it is remarkable that scholars often automatically link manipulation with a *mens rea* element.[75] Some scholars even claim that one can only delineate manipulation by evaluating the state of mind.[76] For example, Fischel and Ross have argued that "there is no objective definition of manipulation." According to them, "[t]he only definition that makes any sense is subjective." Fischel and Ross put forward a couple of arguments to underpin these statements. They, however, stress in fact the importance of a well-defined objective side of manipulation rather than the importance of the *mens rea*. Indeed, the suggested "unsupported price pressure" standard would remove most of the advanced problems, even without reference to the *mens rea*.[77]

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[75] *See, e.g.*, Yadlin, *supra* note 3, at 840 ("... I define stock manipulation as the buying (or selling) of a security for the purpose of increasing (or depressing) its market price."); *see also* Thel, *supra* note 7, at 221 n.17 ("[T]he word 'manipulation' means buying a security for the purpose of increasing the reported price or selling a security for the purpose of decreasing the reported price."); Steve Thel, *The Original Conception of Section 10(b) of the Securities Exchange Act*, 42 STAN. L. REV. 385, 393 (1990) ("[M]anipulation means anything in particular, it means conduct intended to induce people to trade a security or force its price to an artificial level"); Mathias, *supra* note 68, at 7 ("Manipulation, which may be defined as a planned effort to affect the market price of a security by artificial means, has been a troublesome problem for centuries.").

[76] *See, e.g.*, Ferrarini, *supra* note 3, at 724 ("The Directive does not include any reference to intent, which is often considered as an essential element of manipulation. . . . [I]t is doubtful that manipulation can be adequately defined by omitting any reference to intent."); Jesper L. Hansen, *The New Proposal for a European Union Directive on Market Abuse*, 23 U. PA. J. INT'L ECON. L. 241, 267 (2002) ("Some of these examples are acceptable, such as wash sales. Others bristle with difficulties, such as trading specifically to interfere with the spot or the settlement price of derivative contracts. Here, an evaluation of the person's state of mind seems necessary."); GOLDWASSER, *supra* note 3, at 109 ("The line between legitimate and manipulative trading is a very thin one. The distinction depends upon proof of the requisite intent on the part of the defendant."); Vauplane & Simart, *supra* note 1, at 229 (referring to the heading, "Paramount Importance of the Intent Element"); Poser, *supra* note 68, at 729 ("Where a person is accused of manipulating a stock through trading, his activities . . . are in themselves consistent with the perfectly innocuous . . . purpose of making a profit. This is in contrast with other manipulative techniques, such as false statements, bribery, or fictitious transactions, which, being deceptive or at least wrongful in themselves, require a less specific intent to make them manipulative.").

[77] Fischel & Ross, *supra* note 3, at 509-10. Their first argument is that "traders with private information who disguise their trades with the effect that prices do not move in the correct direction, or even move in the wrong direction, also trade with 'good' intent and thus are not engaged in manipulation because their ultimate profit is attributable to the private information they possess." *Id*. at 510. This group of traders, however, does not need the protection of "good intent," since traders who protect their information will not cause any price pressure. And if they do cause price pressure, it will most likely be *supported*. Fischel and Ross further raise the question, "what happens if the trades move prices in one direction because the trader genuinely believes that prices will move in this

This does not mean that a prohibition on manipulation should be completely objective. Rather, a prohibition should emphasize the objective side of manipulation without overstressing the *mens rea*. If a legislator designs a prohibition in line with the "unsupported price pressure" standard, the introduction of a *mens rea* element is, at most, optional. The description of costly behavior, namely exercising unsupported price pressure, is disconnected from the culpability. Conversely, if a legislator has designed a prohibition that is too broad, in the sense that it covers more situations than "exercising unsupported price pressure," a legislator could better rethink the objective side, than recover the definition with a *mens rea* element. Rethinking the objective side secures the quality and transparency of jurisdiction, while continuing a broad prohibition replaces the individual assessment of the "unsupported price pressure" and the "culpability" with a single assessment of the *mens rea*, resulting in a mingling of different elements.

2. The Implementation of the Mens Rea

Should the suggested prohibition on manipulation, which is completely objective, incorporate a *mens rea* element to include culpability? Some people will claim that an adequate prohibition merely applies to traders who are culpable of exercising unsupported price pressure. Other people will argue that a prohibition with a *mens rea* element raises the burden of proof in an unjustifiable way. Taking a stance in this legal doctrinal debate is beyond the scope of this Article. Nevertheless, if a legislator prefers a prohibition with a *mens rea* element, he will have to think about the design of this element. Most discussions on the prohibition on manipulation ignore this question. A legislator could *grosso modo* design the *mens rea* element in line with the *mens rea* elements in the prohibition on information-based manipulation and the prohibition on insider trading.

The U.S. and E.U. regimes against information-based manipulation prescribe that the person was at least "reckless." Basically, under Rule 10b-5, the regulator has to prove that the person was reckless in regard

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direction, but the trader turns out to be wrong and prices ultimately move in the opposite direction?" *Id.* at 509. Their answer is that, "[t]rading based on a genuine belief that prices will ultimately move in the direction of the trades is the essence of nonmanipulative trading." But the standard of unsupported price pressure is sufficient in this case. A trader with a weak belief is allowed to exercise little price pressure. In addition, a trader with significant information can exercise large price pressure. If traders follow this rule of thumb, they will exercise supported price pressure.

to the information deficiency.[78] Likewise, under the European prohibition on information-based manipulation, the regulator should prove that the person knew or was reckless in not knowing about the information deficiency.[79] Furthermore, the U.S. and E.U. regimes against insider trading require that there is some type of "knowledge" with respect to the inside information. Despite the fact that case law under Rule 10b-5 is ambiguous, prescribing either the "knowing possession of"[80] or "the *use* of inside information,"[81] the regulator has to prove some type of "knowledge." The same applies to the European prohibition on insider trading, which is applicable to the "use of"[82] inside information.

So, a legislator has at least two models to design the *mens rea* element in the prohibition on trade-based market manipulation. The first model connects liability to "recklessness in not knowing that one exercises unsupported price pressure" and the second model to "knowing that one exercises unsupported price pressure." The first model is preferable from a practical point of view. Lowering the minimum mental state to "recklessness in not knowing" makes the proof of manipulation less complicated. Further, trade-based market manipulation relates more to information-based manipulation, which uses the "recklessness in not knowing" element, than to insider trading. Consequently, the trader would be allowed to underestimate the extent of his price pressure, overestimate his information position, and/or miscalculate the justified price pressure, as long as he is not reckless in not knowing that he does so. I endorse the view that this approach results in a complex assessment. At the same time, it makes the adjudication adequate and transparent.

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78 *See* Ernst & Ernst v. Hochfelder, 425 U.S. 185, 199 (1976) (deciding that negligence is not actionable under Rule 10b-5); *see also* Sundstrand Corp. v. Sun Chem. Corp., 553 F.2d 1033, 1044 (7th Cir. 1977) (deciding that a reckless omission of material facts are actionable under Rule 10b-5). Criminal proceedings require willful violations of the Act, according to Section 32(a) SEA 1934.

79 European Parliament Directive 2003/6/EC of Jan. 2003, § 1(2)(a). According to Section 1(2)(c) MAD 2003, it is prohibited to disseminate false or misleading information "where the person who made the dissemination knew, or ought to have known, that the information was false or misleading." *Id.*

80 *See, e.g.*, United States v. Teicher, 987 F.2d 112, 120 (2d Cir. 1993) (arguing that the "knowing possession of inside information" is sufficient).

81 *See, e.g.*, United States v. Smith, 155 F.3d 1051, 1069 (9th Cir. 1998) (deciding that the "*use* of inside information" should be required in criminal cases).

82 European Parliament Directive 2003/6/EC of Jan. 2003, § 2(1)(a). Section 2(1)(a) of MAD states: "Member States shall prohibit any person . . . who possesses inside information from using that information by acquiring or disposing of . . . financial instruments . . . ." *Id.*

V. APPLICATION AND EXTENSION

A. Application

The application of the prohibition on manipulation has been troublesome since its introduction. Regulators find it hard to prove that suspects have manipulated the market. The "unsupported price pressure" standard will not bring relief and asks for an assessment of the justified price pressure. Yet, a regulator has two methods to prove the exercise of unsupported price pressure: direct proof and alternative proof.

1. Direct Proof of Unsupported Price Pressure

The preferred way to prove unsupported price pressure is by arguing that the exercised price pressure was larger than the justified price pressure, formal proof, or to present incriminating records and statements, record proof. The formal method limits the probability of Type I errors. However, it is hard to discover the information position of the suspect at the moment of trading, so that the approximation of the justified price pressure is questionable. Further, the regulator, of course, welcomes records and statements that incriminate the suspect, but in most suspicious situations there simply are none. I do not consider this as a weakness of the analysis. It shows why proof of unsupported price pressure is hard to produce. The following paragraphs examine the idea and application of formal proof and record proof, notwithstanding that only a small percentage of the cases allows for these types of proof.

Sections II and III explain how a regulator could uncover formal evidence of unsupported price pressure. I will shortly recapitulate the step-by-step process here. Sections II.B.1 and Section II.B.2 explain how the regulator should first investigate the extent of the exercised price pressure by approximating and polishing this value. He will then have to discover the information position of the suspect at the moment of trading. Thereupon, the information ought to be translated into the justified price pressure. If the regulator has determined both the exercised price pressure and justified price pressure, he has all the information to decide on the quality of the exercised price pressure. It is recommendable that a regulator, who decides that the suspect has exercised unsupported price pressure, investigates if either the unsupported price pressure is material or, in case the suspect has benefited, the unsupported profit is material.

A regulator will now and then have recordings of suspicious conversations, which may be sufficient to prove the exercise of unsupported price pressure. One can think of the following recording: "I prefer a stock price of $12 instead of $10. Could you buy a large amount of shares and inflate the stock price? I will compensate you for all costs. The regulator will qualify this as manipulation, but I really need a high price at the moment." It would be a clear-cut case of unsupported price pressure, if the conversation partner actually buys a large amount of shares and inflates the stock price. The regulator could argue that the suspect probably exercised unsupported price pressure as large as +$2 and can then make a judgment about the materiality. Yet, the proof will be more troublesome when the recording is vague, leaving room for a scenario in which the suspect exercised supported price pressure.

2. Alternative Proof of Unsupported Price Pressure

In most situations, the regulator will probably not be able to provide formal proof of manipulation, nor collect incriminating records. Alternatively, he will most likely focus on two specific situations. First, imagine a trader exercising *extreme* price pressure, for example +$5, which he can hardly justify with an information set. Second, consider a trader who executes *exceptional* trades and price pressure right before he is in a position to make a profit that is dependent on the price pressure. Both situations provide indications that the trader has exercised unsupported price pressure. Further, there might be sufficient indications of the extent of the unsupported price pressure. This Section discusses these situations and how to deal with the proof of unsupported price pressure and the materiality.

In principle, a trader does not want to exercise price pressure, let alone extreme price pressure, as he would trade at subordinate prices and make a loss. Nevertheless, there are examples of traders making mistakes when communicating orders to broker-dealers and examples of broker-dealers making mistakes when entering the order, resulting in extreme price pressure. Consider a trader exercising price pressure of +$5, so that the stock price rises by ten percent. Under these circumstances, a regulator is able to bear the evidence, since it is unlikely that the suspect can justify the price pressure with a sufficiently large information set. Of course, the suspect may provide proof to the contrary. In the absence of any rebuttal, the regulator is able to conclude that the extreme price pressure of +$5 is completely unsupported and that such unsupported price pressure is material.

Otherwise, the regulator might bear the evidence when the suspect cumulatively: (1) shows *exceptional* trading behavior, that is, his trading behavior deviates from his regular trading behavior;[83] (2) exercises *exceptional* price pressure, that is, he exercises more price pressure than he normally exercises;[84] and (3) is able to make a profit, which is dependent on the *exceptional* price pressure.[85] Consider the situation in which the trader shows exceptional trading behavior by buying a large amount of ABC shares on the exchange and exercising upward price pressure of +$1, right before he sells an even larger amount of ABC shares in a contractual person-to-person deal at a price derived from the price on the exchange. When there is sufficient evidence that the price pressure of +$1 was completely unsupported, the question remains whether +$1 is considered to be material unsupported price pressure. If the regulator decides that such unsupported price pressure is in fact immaterial, he could investigate whether the suspect realized a material unsupported profit. This appraisal is contextual.[86]

B. Extension

Other prohibitions and parts of prohibitions might benefit from the "unsupported price pressure" standard as well. The prohibitions on

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[83] The trading behavior may be qualified as *exceptional* when: (1) the number and the size of transactions deviates; (2) the interval between transactions is smaller; (3) the timing and the pattern of the transactions is different; (4) the type of instrument is conspicuous; and/or (5) the trader uses market-orders instead of limit-orders.

[84] The price pressure is exceptional when a trader, who normally does not exercise any price pressure or minor price pressure, suddenly exercises large price pressure. This is suspicious when the trader exercises this price pressure shortly before he can make a profit that is dependent on this price pressure.

[85] The price pressure may go together with an expected profit, for example, when the trader first exercises upward price pressure on the exchange and then sells a large amount of derivatives in another market on the exchange. Furthermore, exercising price pressure on the exchange in the shadow of contracts, offerings, and takeovers might be profitable due to static prices of the exchange.

[86] It should be noted that the regulator, under the given circumstances, cannot automatically conclude that a trader exercised unsupported price pressure. There is always a chance that the exercised price pressure was completely supported or immaterially unsupported. Therefore, the regulator should look for additional circumstantial evidence that supports the hypothesis of unsupported price pressure. Besides, he should carefully analyze facts and circumstances which throw doubt upon the hypothesis of unsupported price pressure. Also, the regulator cannot conclude that the trader exercised unsupported price pressure if there is a large interval between the moment of exercising price pressure and the moment of benefiting from the price pressure. A trader would probably not exercise unsupported price pressure if he cannot benefit from it right away. The trader would give corrective traders the chance to remove the market inefficiency, thereby losing his opportunity to make an unsupported profit.

manipulation in the United States, European Union, and Australia are not only applicable to traders who raise or depress the stock price, but also to traders who create apparent active trading and induce other traders to follow suit. The prohibitions are vague in this respect. Besides, the prohibition of corners and squeezes has proven to be problematic. The main question is how to distinguish between legitimate and manipulative corners and squeezes. This Section will examine if and how legislators might overcome these shortcomings with the proposed standard.

1. Unsupported Market Information

As yet, the analysis has ignored the situation in which a trader executes transactions at *t*, not exercising any direct price pressure at *t+1*, but spreading market information at *t+2*, so that the market might create indirect price pressure at *t+3*. Normally, an informed trader values his information position highly and tries to protect it. As long as an informed trader can protect his information privilege, he will be able to make a profit by trading financial instruments. In order to protect his information from other market participants, he will act discreetly and limit the obtrusiveness of his transactions. Nevertheless, he will have to act before the information becomes public by disclosure or research. As the informed trader starts trading more aggressively, he will spread more market information and break off his information privilege. Other market participants pick up this information and use it for their trading decisions.[87]

In principle, an uninformed trader does not spread valuable market information and will be ignored by the rest of the market. Nonetheless, if an uninformed manipulator mimics the behavior of an informed trader, he can voluntarily spread false or misleading market information, which market participants believe to be true, possibly causing indirect unsupported price pressure. He could, for example, increase the number and/or the size of his transactions, while trading at times when informed traders trade. By changing the characteristics of the trades, the uninformed trader falsely signals that he is informed. Market participants might believe these signals: Why else would he take a chance to attract traders and trade at subordinate prices? This way an uninformed trader might motivate traders to jump on the bandwagon,

[87] *See* Gilson & Kraakman, *supra* note 31, at 572-79. Gilson and Kraakman have described this refined mechanism of derivatively informed trading through trade decoding and price decoding. *Id.*

causing indirect unsupported price pressure. Such an uninformed trader in fact spreads false or misleading information about the value of financial instruments.

Legislators sometimes qualify trading at *t* as manipulative when it creates no direct price pressure at *t+1*, but produces false or misleading market information at *t+2* (irrespective of the potential indirect price pressure at *t+3*). Three prohibitions in particular apply to this situation, these being Section 9(a) of the SEA, Section 1(2)(a) MAD and Section 1041B CA. Section 9(a) of the SEA formulates it as "creating actual or apparent active trading in" a security "for the purpose of inducing the purchase or sale of such security by others." Next, Section 1(2)(a) MAD 2003/6/EC applies to "transactions . . . which give, or are likely to give, false or misleading signals as to the supply of, demand for or price of financial instruments." Likewise, Section 1041B CA prohibits, for example, an act that "is likely to have the effect of creating, or causing the creation of, a false or misleading appearance . . . of active trading."

These prohibitions are not completely clear at face value and deserve an adequate interpretation. First, Section 9(a) of the SEA vaguely defines the objective side. What do parts like "actual or apparent active trading" and "inducing the purchase or sale" mean? It further relies heavily on the *mens rea*, by using the constituent element "for the purpose of inducing." The European and Australian definitions are objective, but again, without an explicit delineation. The European prohibition points at creating "false or misleading signals," while the Australian prohibition describes it as "a false or misleading appearance . . . of active trading." The problem with these two descriptions is the lack of an explicit standard. When is the signal or the appearance false or misleading? The "unsupported price pressure" standard cannot be used to interpret the prohibitions, since there is no direct price pressure, only market information.

The solution is converting the "unsupported price pressure" standard into an "unsupported market information" standard, distinguishing between high- and low-quality market information. The trading results in supported market information if the trader possesses sufficient information. Otherwise, the trading results in unsupported market information. The prohibitions in effect can be replaced with, or interpreted in line with, the "unsupported market information" standard. Section 9(a) of the SEA could be interpreted as *executing transactions that result in unsupported market information for the purpose of inducing the purchase or sale of a security by others,* Section 1(2)(a) MAD

2003/6/EC as *executing transactions that result in unsupported market information as to the supply of, demand for, or price of financial instruments,* and Section 1041B CA as *an act that results in unsupported market information.*

Thus, a trader manipulates the market when he trades and spreads unsupported market information. A regulator will have to approximate the extent of the dispersed market information and the extent of the underlying information before he can draw any conclusions about the quality of the market information. If the dispersed market information is larger than the underlying information, the market information was false or misleading. It is not hard to imagine that a regulator will have problems applying the "unsupported market information" standard in practice—they will rarely be able to furnish proof. This shortcoming, however, relates more to the complexity of regulating manipulation, than to quality of the "unsupported market information" standard. There is, however, an exception. Fictitious transactions, like wash sales and matched orders, will spread false or misleading information by definition.

2. Corners and Squeezes

A futures contract calls for delivery of a commodity, whereby the maturity date and agreed-upon price are specified. A futures contract involves two contracting parties. The trader taking the long position commits to purchasing the commodity at the maturity date, while the trader taking the short position commits to delivering the commodity on that date. A futures contract is a zero-sum game: The trader who takes the long position has a profit that equals the spot price at maturity minus the agreed-upon price, while the trader who takes the short position has a profit that equals the agreed-upon price minus the spot price at maturity.[88] The trader who takes the long position profits and the trader who takes the short position loses when the spot price rises, just as the long loses and the short profits when the spot price drops. Hedgers and speculators use futures markets for different reasons. Hedgers use futures contracts to reduce the risk of variable spot prices. By contrast, speculators use futures contracts to anticipate variable futures prices.[89]

Futures contracts provide opportunities for manipulation. A trader creates market power by buying a large part of the deliverable supply of

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88 *See, e.g.,* ZVI BODIE, ALEX KANE & ALAN J. MARCUS, INVESTMENTS 740-41 (2002).

89 *Id.* at 750.

the commodity, referred to as a corner, and/or taking a large long position, referred to as a squeeze, thereby forcing the shorts to deliver the commodity at the expiration day. Since the shorts are only able to acquire the commodity at increasing marginal costs due to scarcity in the delivery market, and due to transportation costs as regards to other markets, the spot price and futures price rise. The manipulator profits from his market power, because the shorts have to settle at an inflated price. The manipulator buys, for example, a large amount of wheat and takes a large long position, thereby creating market power. Next, he limits the supply of the wheat and requires a large amount of deliveries, thereby inflating the spot price from $20 to $25. Shorts must either purchase commodities at an extra $5 or negotiate a cash settlement between $0 and $5, which equals the profit of the manipulator.

Generally, the problem is how to distinguish between normal and manipulative market power. The analysis focuses on defining the distinction instead of tracing potential forms of manipulative market power. As the Introduction explains, after defining the concept of behavior, other points of controversy can be more readily discussed. Considering prior articles on corners and squeezes, authors regularly use two models to distinguish between normal and manipulative market power. The first model distinguishes between normal and artificial demand, or normal and artificial prices.[90] Normal demand results in a normal price and artificial demand in an artificial price. The second model discriminates between intent to create normal prices and intent to create artificial prices, or between intent to trade legitimately and intent to corner or squeeze the market.[91] Basically, both models require a

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[90] *See* Craig Pirrong, *Commodity Market Manipulation Law: A (Very) Critical Analysis and a Proposed Alternative*, 51 WASH. & LEE L. REV. 945, 960 (1994). Pirrong argues that "price artificiality is the *sine qua non* of manipulation." *Id.* Also, Jerry W. Markham argues that a manipulator "is buying so many futures contracts and such large quantities of the underlying commodity that its market power is sufficient to create and sustain a manipulated or artificial price." Jerry W. Markham, *Manipulation of Commodity Futures Prices – The Unprosecutable Crime*, 8 YALE J. ON REG. 281, 283 (1991).

[91] Fischel and Ross conclude that definition is impossible without assessment of intent. Fischel & Ross, *supra* note 3, at 547 ("[W]e are left with no objective definition of manipulation in futures markets."). Richard D. Friedman states that, "[a]lthough intent is an essential element of a squeeze under the classical approach, it is the intent to create an artificial price." Richard D. Friedman, *Stalking the Squeeze: Understanding Commodities Market Manipulation*, 89 MICH. L. REV. 30, 58 (1990).

precise definition of normal and artificial demand or prices, which the literature has not yet provided.[92]

What are the conditions to qualify demand or prices as normal or artificial? According to the "unsupported price pressure" standard, the regulator should compare the exercised price pressure with the justified price pressure. A trader exercises supported price pressure and creates a normal futures price when the exercised price pressure is equal to or less than the justifiable price pressure. Logically, the trader exercises unsupported price pressure and creates an artificial futures price when the exercised price pressure is larger than the justified price pressure. The method to determine the extent of the exercised price pressure is explained in Section II.B, and the method to derive the justifiable price pressure in Section III.A.2. The justifiable price pressure should be derived from the information position of the trader. The term "information" includes all information that: (1) points at an undervaluation or overvaluation of a futures contract or (2) points at coming supported price pressure with respect to a futures contract.

Thus, a trader manipulates the market when he exercises unsupported price pressure in the futures market, which accompanies an expected profit due to cornering the market and/or squeezing the shorts. It is important to note that a trader who buys a large part of the deliverable supply or takes a large long position, thereby exercising price pressure in the futures market and making a profit by cornering the market and/or squeezing the shorts, is not automatically a manipulator. The trader might have sufficient information that he or other persons or companies will demand large amounts of the commodity, for example wheat, in the near future, so that the exercised price pressure is supported. This means that a regulator will always have to assess the information position and the potential demand of the suspect. It further means that an objective definition of futures manipulation is sufficient.[93] As Section IV.C.1 explains, legislators may include a *mens rea* element; however, they are not obliged to do so.

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[92] *See, e.g.*, Fischel & Ross, *supra* note 3, at 546 (arguing that the concept of price artificiality brings no solution to distinguish between legitimate and manipulative market power); Friedman, *supra* note 91, at 54-55 (criticizing some interpretations of the term "artificial price"); Easterbrook, *supra* note 47, at 117-18 (arguing that real demand and artificial demand are indistinguishable).

[93] *Cf.* Easterbrook, *supra* note 47, at 117-18 ("No one accumulates futures contracts—for reasons good or ill—unaware of what he is doing. Everyone in the futures market intends to make as much money as he can. Scrutiny of intent therefore is not likely to assist in the search for manipulation.").

VI. CONCLUSION

Trade-based market manipulation has received wide attention in theoretical and policy discussions, even though the behavior is still poorly defined in both economic and legal literature. This Article contributes to an understanding of manipulation by providing a precise definition of the concept, that being *exercising unsupported price pressure*. The Article explains how legislators could design an adequate prohibition on manipulation and how regulators might improve and interpret contemporary prohibitions. It further provides insights in how to enforce a prohibition on manipulation.

A regulator should focus on the extent of price pressure rather than on the size of stock price changes. "Price pressure" is defined as the contribution of a set of transactions to the total price change. Consequently, it is possible to distinguish between the contribution of the suspect and the contributions of other market participants to the stock price change. If a regulator would not look at the contribution of the suspect but at the stock price variance during the trading of the suspect, the regulator most likely overestimates or underestimates the contribution of the suspect to the stock price change.

Another recommendation is that a regulator ought to allow supported price pressure and ban unsupported price pressure. Supported price pressure has an adequate influence on the stock price, while unsupported price pressure creates a market inefficiency. If a trader's price pressure is larger than the justifiable price pressure, he produces unsupported price pressure. The exercised price pressure minus the justified price pressure is the extent of the unsupported price pressure. Otherwise, if a trader's price pressure is equal to or less than the justifiable price pressure, he produces supported price pressure.

An adequate prohibition on manipulation applies to all transactions that result in unsupported price pressure, causing extra price volatility and extra information asymmetries. A trader exercising unsupported price pressure initiates welfare shifts between uninformed traders on the one hand and corrective traders or himself on the other hand. Indeed, a trader who exercises unsupported price pressure creates an informational privilege, of which he may take advantage. In conclusion, we can say that unsupported price pressure results in welfare shifts and reduced liquidity, which has a negative impact on market operations.

The Article has some policy implications. It shows that legislators should design a prohibition on manipulation according to the "unsupported price pressure" standard and interpret contemporary prohibitions in line with this standard. Viewed in this context, one can see why a regulator should take into account the materiality of the unsupported price pressure if possible. Further, contrary to conventional wisdom, the prohibition should better stress the objective side of manipulation than the *mens rea*. Finally, attention is paid to the way the regulator has to prove the exercise of unsupported price pressure.