

## **The impact of insider trading doctrine on the incidence of insider trading: An analysis of the effect of the misappropriation theory**

Fernán Restrepo\*

### Abstract

Insider trading attracts unique attention in corporate and securities law, but despite the salience of the practice, there is limited empirical evidence on whether the law is effective at preventing it, and particularly whether the adoption of the main doctrine that forms the basis of the insider trading prohibition today – the doctrine of the “misappropriation theory” – had a meaningful deterrent effect. This paper examines this question by studying the impact of the Supreme Court’s decision in *O’Hagan*, which adopted the misappropriation theory, on target run-ups in mergers and acquisitions (a common proxy for insider trading). The data show that run-ups decreased significantly and immediately in relation to announcement returns after *O’Hagan*, which suggests that the misappropriation theory in fact deterred insider trading.

JEL classification: K20, K22.

---

\* Assistant Professor of Law, University of California – Los Angeles. Email: [fernan.restrepo@law.ucla.edu](mailto:fernan.restrepo@law.ucla.edu). I am extremely grateful to Stephen Bainbridge, Sung Hui Kim, James Park, and Andrew Verstein for very helpful comments.

## The impact of insider trading doctrine on the incidence of insider trading: An analysis of the effect of the misappropriation theory

### 1. Introduction

Few types of behavior in corporate and securities law attract as much attention as insider trading – that is, securities transactions on the basis of material non-public information (MNPI).<sup>1</sup> The Securities and Exchange Commission (SEC) and other enforcement entities have initiated dozens of enforcement actions to deter the practice, courts often wrestle with the contours of the insider trading prohibition, and there is a long list of academic studies on the design and potential effects of the prohibition. But despite the salience of this topic, there is very limited empirical evidence on whether the law effectively deters the practice, and particularly whether the adoption of the main doctrine that forms the basis of the insider trading prohibition today – the “misappropriation theory” – had any deterrent effect. This paper examines this question by studying the impact of the Supreme Court’s decision in *O’Hagan*, which adopted the misappropriation theory and, in doing so, significantly expanded the scope of the insider trading prohibition.

Since the 1980s, the “classical theory” of insider trading was the primary doctrine that courts employed to prevent the practice. Under this doctrine, a person is liable for unlawful insider trading if that person trades in the shares of a company using MNPI obtained from the company, and the person owes fiduciary duties to the company’s shareholders.<sup>2</sup> This prohibition covers not only situations in which corporate insiders trade on MNPI obtained from the issuer, but also situations in which insiders pass MNPI to a third party for a personal benefit and the third party in turn trades on the information.<sup>3</sup> But precisely because the classical theory required that the person who traded on (or tipped) MNPI owe fiduciary duties to the shareholders of the issuer, the doctrine had the important limitation of capturing a very limited set of individuals: corporate officers and directors of the company, outsiders with a confidential contractual relationship with the firm, employees of the issuer other than directors and officers, and tippees of the previous individuals.<sup>4</sup>

---

<sup>1</sup> This is a common definition of insider trading, which I follow for ease of reference. However, as explained below, this definition is imprecise because under the doctrine that governs insider trading today, the term covers not only insiders but also outsiders that trade on MNPI. In addition, not all forms of trading on MNPI are illegal.

<sup>2</sup> *Chiarella v. United States*, 445 U.S. 222 (1980).

<sup>3</sup> *Dirks v. SEC*, 463 U.S. 646 (1983).

<sup>4</sup> *Dirks v. SEC*, 463 U.S. 646 (1983) (stating that individuals with a confidential contractual relationship with the firm are subject to the insider trading prohibition, and setting the doctrine for tipper/tippee situations); *U.S. v.*

The scope of the insider trading prohibition, however, radically changed in 1997, when the Supreme Court adopted the “misappropriation theory” of insider trading in its *O’Hagan* decision.<sup>5</sup> Under this doctrine, a person violates the insider trading prohibition if two basic conditions are met: the person trades on (or tips) MNPI obtained from a source with whom the person has a confidential relationship (whoever that source is), and the transaction (or the tipping of MNPI) is not disclosed to the source. The misappropriation theory therefore eliminated the requirement that the person using confidential information for a personal benefit owe fiduciary duties to the shareholders of the issuer, which implies a significant expansion of the range of individuals captured by the law. As a result, it seems reasonable to expect that the incidence of insider trading declined after the adoption of the theory.

This paper tests this hypothesis by examining the impact of the *O’Hagan* decision on a common proxy for insider trading: target run-ups in mergers and acquisitions (“M&A”) – that is, the cumulative abnormal returns for the shares of the target company before the transaction is publicly announced. The intuition behind this proxy is that individuals who hold non-public information about mergers and acquisitions can make significant profits if they buy shares in the target company before the transaction is announced (since M&A typically involve the payment of a large premium over market prices). Therefore, a significant increase in the target’s pre-merger price is likely indicative of a high incidence of trading on confidential information about the transaction (see, e.g., Keown and Pinkerton, 1981; Meubroek, 1992; Sanders and Zdanowicz, 1992; Meubroek, 1992).

Because *O’Hagan* applies to all public companies, there is no natural set of deals that may work as a control group for the analysis, which raises the concern that post-*O’Hagan* changes in the run-ups may not be driven by the decision. However, I mitigate this concern in various ways. First, I use the returns of the target company *at the announcement date* of the M&A transactions as a benchmark for the long-term evolution of the run-ups. If there are factors unrelated to *O’Hagan* that coincided in time with the decision and that affected how much investors value M&A targets, then it is reasonable to expect that those factors will affect both

---

Whitman, 904 F. Supp. 2d 363, 370 (S.D.N.Y. 2012), as corrected (Nov. 19, 2012), aff’d, 555 Fed. Appx. 98 (2d Cir. 2014) (unpublished) (discussing that circuit courts have held that lower-level employees are subject to the insider trading prohibition).

<sup>5</sup> U.S. v. O’Hagan, 521 U.S. 642 (1997).

the pre-announcement returns and the announcement returns – not just the pre-announcement returns. Second, to minimize the possibility that the analysis will capture confounding events, I use a relatively short time window (about a decade) for the baseline estimations, and then I examine whether the results hold in a longer window as part of the sensitivity analyses. Third, I isolate the effect of general market fluctuations during the period for which I compute the run-ups (30 days prior to the announcement of each transaction) by defining the run-ups in terms of abnormal returns – that is, by subtracting average market returns from the returns of the target. And fourth, in the multivariate analysis, I control for observable factors that may affect the returns.

The results show that the run-ups in fact decreased significantly in relation to the announcement returns after *O'Hagan*. In this sense, after *O'Hagan*, there was less anticipatory trading explaining the overall valuation effect of M&A bids, which is consistent with the notion of less insider trading.

The data presented in this paper have important implications. The insider trading prohibition is in large part motivated by the idea that investors will be disincentivized from collecting information about firms and even investing in the securities market if they anticipate that they will be trading with parties who obtained an informational advantage by misappropriating confidential information (Manove, 1989; Ausubel, 1990; Fishman and Hagerty 1992; Khanna, Slezak, and Bradley 1994). If this idea is correct, therefore, the results presented here suggest that the misappropriation theory may contribute to a stronger information environment, a lower cost of capital, and a more liquid securities market through its deterrent effect on insider trading.

In addition, some commentators have advocated expanding the scope of the insider trading doctrine beyond the contours delineated by *O'Hagan* (and, in fact, some courts and Congress have taken some steps in this direction<sup>6</sup>). The fact that this paper shows that the misappropriation theory appears to deter insider trading suggests that those reforms also may have a deterrent effect – and may therefore be desirable. However, this conclusion requires two important caveats. First, the adoption of the misappropriation theory was a particularly major

---

<sup>6</sup> See, e.g., Sarbanes-Oxley Act § 807; *S.E.C. v. Dorozhko*, 574 F.3d 42 (2d Cir. 2009); *SEC v. Rocklage*, 470 F.3d 1 (1st Cir. 2006). See also Nagy (2009) and Bainbridge (2012) for a discussion.

doctrinal step, which implies that further doctrinal expansions may not necessarily have the same impact. And second, this paper does not examine what the optimal level of deterrence is.

The rest of this paper is organized as follows. Section 2 reviews the evolution of the main doctrines that form the basis of the insider trading prohibition today, Section 3 reviews previous empirical studies on the relationship between insider trading law and the frequency with which insider trading occurs, Section 4 discusses the data and the methodology, Section 5 presents the results, Section 6 discusses the implications of the results, and Section 7 concludes.

## 2. Institutional background

Insider trading law in the United States is essentially a judicial creation. The SEC has historically relied on Rule 10b-5 (which broadly prohibits fraud in connection with the purchase or sale of a security) to prosecute insider trading; but since that rule does not directly prohibit the practice, courts have been ultimately responsible for defining the elements of the prohibition.

In the first Supreme Court case to address those elements, *Chiarella v. United States*,<sup>7</sup> the court adopted the so-called “classical theory” of insider trading. Under this theory, a person violates Rule 10b-5 if the person trades in a company’s shares on the basis of material non-public information about the firm and the person owes fiduciary duties to the shareholders of the company. The directors and officers of the firm (typically referred to as “insiders”) are the standard individuals that owe fiduciary duties to the shareholders, but the classical theory also covers other employees and temporary agents of the firm – that is, outsiders with a confidential contractual relationship with the company, such as accountants, lawyers, and underwriters, who become derivative insiders by virtue of their contractual position.<sup>8</sup> In addition, the classical theory covers not only insiders that trade on MNPI; it also covers “tippers” and “tippees” of confidential information – that is, insiders that pass the information to a third party in breach of a duty of confidentiality and for a personal benefit (the “tipper”), and the third party who trades on that information and who knows or should know that the information was

---

<sup>7</sup> 445 U.S. 222 (1980).

<sup>8</sup> *Dirks v. SEC*, 463 U.S. 646 (1983) (on temporary agents); *U.S. v. Whitman*, 904 F. Supp. 2d 363, 370 (S.D.N.Y. 2012), as corrected (Nov. 19, 2012), *aff’d*, 555 Fed. Appx. 98 (2d Cir. 2014) (unpublished) (on employees of the firm).

passed in breach of a duty of confidentiality (the “tippee”). In these situations, both the tipper and the tippee are considered to have breached Rule 10b-5.<sup>9</sup>

The classical theory is a narrow doctrine to prohibit insider trading precisely because the theory requires a fiduciary relationship between the person that trades on confidential information (or that passes the information for a personal benefit) and the shareholders of the company whose shares are traded.<sup>10</sup> In *Chiarella*, for example, various companies planning to acquire other companies hired Pandick Press, a financial printer, to print takeover documents. While working on the task, Vincent Chiarella, one of the employees of Pandick Press, inferred the identities of the parties to the transactions, bought shares in the target firms, and sold the shares when the transactions were publicly announced – thus making a significant profit. Even though Chiarella exploited MNPI obtained from Pandick Press and its clients, the Supreme Court held that he did not commit unlawful insider trading because he did not owe any fiduciary duty to the shareholders of the selling companies. According to the court, a person that fails to disclose material information prior to the consummation of a transaction commits fraud only when that person has a duty to disclose the information, and that duty exists only when there is a “fiduciary or similar relation of trust and confidence” between the parties to the transaction. As a result, according to the court, Chiarella’s trades could not be fraudulent.

An important motivation behind the classical theory was the desire to allow for the prosecution of traditional insiders that misused confidential information and, at the same time, avoid an overly broad insider trading prohibition.<sup>11</sup> However, the theory allowed a wide range of individuals outside the issuer to escape liability in instances in which such individuals traded

---

<sup>9</sup> *Dirks v. SEC*, 463 U.S. 646 (1983).

<sup>10</sup> See also, for example, Langevoort (1995, p. 872); Pritchard (1998, p. 15); Bainbridge (1999, p. 1599); and Nagy (2009, p. 1326).

<sup>11</sup> See *Chiarella v. United States*, 445 U.S. 222, 233 (1980) (holding that “[w]e cannot affirm petitioner’s conviction without recognizing a general duty between all participants in market transactions to forgo actions based on material, nonpublic information. Formulation of such a broad duty ... should not be undertaken absent some explicit evidence of congressional intent”). See also Pritchard (2003, p. 933) and Nagy (2009, p. 1326) for a discussion of the goals behind the classical theory. In *Dirks*, the court reiterated the desire to avoid an overly broad insider trading prohibition, but this time the court emphasized its concern about chilling research by market analysts. According to the court, “Imposing a duty to disclose or abstain solely because a person knowingly receives material nonpublic information from an insider and trades on it could have an inhibiting influence on the role of market analysts, which the SEC itself recognizes is necessary to the preservation of a healthy market. It is commonplace for analysts to ‘ferret out and analyze information,’ and this often is done by meeting with and questioning corporate officers and others who are insiders. And information that the analysts obtain normally may be the basis for judgments as to the market worth of a corporation’s securities. The analyst’s judgment in this respect is made available ... to clients of the firm. It is the nature of this type of information, and indeed of the markets themselves, that such information cannot be made simultaneously available to all of the corporation’s stockholders or the public generally.” *Dirks v. S.E.C.*, 463 U.S. 646, 658–59 (1983).

on MNPI obtained in questionable ways, which led to significant resistance against the doctrine. In fact, the *Chiarella* decision itself was a divided opinion, with Chief Justice Marshall and Justice Blackmun dissenting and arguing that the “narrow construction” of the insider trading prohibition adopted by the court was inconsistent with the expectations of Congress – which, according to the justices, likely intended to generally limit trading on the basis of information that was unlawfully converted for personal gain, not just instances in which corporate insiders engage in such behavior.<sup>12</sup>

The SEC also responded to *Chiarella* by issuing Rule 14e-3, which the commission adopted by invoking its general authority to regulate tender offers under Section 14(e) of the Securities Exchange Act. Rule 14e-3 prohibits any person who possesses MNPI about a tender offer from trading in the securities of the target if the bidder has taken “substantial steps” to execute the offer and the person that possesses the information has reasons to know that the information is non-public and was received from the parties to the tender offer or any person acting on behalf of those parties. This broad prohibition was not premised on any breach of a fiduciary duty, so it captured a broader set of traders than the classical theory. However, Rule 14e-3 had two important limitations. First, it only covered trades on MNPI relating to tender offers – other material events in a firm’s life, including mergers (the most common form of consolidation between two companies), were not covered by the rule. And second, the validity of the rule was controversial. In *Schreiber v. Burlington Northern, Inc.*,<sup>13</sup> the Supreme Court held that Section 14(e) of the Exchange Act was modeled on Section 10(b), which suggests that the two sections should be interpreted similarly; and, as some commentators point out, since Section 10(b) required a breach of a fiduciary duty, then a natural inference from *Schreiber* was that the SEC had exceeded its rulemaking authority when it adopted Rule 14e-3 (Bainbridge, 2012). In fact, some circuit courts explicitly held that the rule was invalid before the Supreme Court upheld it several years after its adoption.<sup>14</sup>

Reflecting the resistance faced by the classical theory, approximately two decades after its implementation, the Supreme Court decided to adopt a much broader doctrine to prohibit insider trading: the “misappropriation theory.” Under this theory, which the court articulated in its 1997 decision in *O’Hagan*, a person violates Rule 10b-5 if the person (1) trades securities

---

<sup>12</sup> *Chiarella v. United States*, 445 U.S. 222, 240-43; 245-46 (1980).

<sup>13</sup> *Schreiber v. Burlington Northern, Inc.*, 472 U.S. 1 (1985).

<sup>14</sup> See, for example, *U.S. v. O’Hagan*, 92 F.3d 612, 614 (8th Cir. 1996), *rev’d*, 521 U.S. 642 (1997).

on the basis of MNPI obtained from a source with whom the trader has a confidential relationship, and (2) the trader does not disclose the trades to the source. A person that engages in this conduct, according to the court, deceives those who entrusted him with access to confidential information, and therefore the behavior is fraudulent under Rule 10b-5 regardless of whether or not the trader owes fiduciary duties to the shareholders of the issuer.<sup>15</sup> Moreover, like the classical theory, the misappropriation theory covers not only scenarios in which the misappropriator of MNPI trades on the information, but also scenarios in which the MNPI is passed to a third party for a personal benefit and the third party in turn trades on the information.<sup>16</sup>

The misappropriation theory thus significantly expanded the range of individuals captured by the insider trading prohibition. Although the theory still requires a confidential relationship between the source of the information and the misappropriator, as noted, the misappropriator does not need to have a fiduciary relationship with the shareholders of the issuer. In *O'Hagan*, for example, Grand Metropolitan PLC hired Dorsey & Whitney, a large law firm, as a legal advisor for the acquisition of Pillsbury Corporation in a hostile tender offer. James O'Hagan, a partner at Dorsey & Whitney who was not directly involved in the transaction, learned about the transaction and bought shares and call options for the shares of Pillsbury, thus realizing a large profit when he exercised the options and sold the shares after the tender offer was publicly announced. This is a situation that was remarkably similar to the fact pattern in *Chiarella*, which would not have triggered liability under the classical theory because O'Hagan did not have a fiduciary relationship with the shareholders of Pillsbury. However, in adopting the misappropriation theory proposed by the SEC, the Supreme Court held that O'Hagan was liable because he secretly traded on MNPI that he confidentially obtained from Dorsey & Whitney and the firm's client.

The most immediate goal of the misappropriation theory was to address the fact that in many corporate events, and especially in M&A, "there is a fairly wide circle of people with confidential information" who do not owe any fiduciary duties to the shareholders of the issuer – but who may still misuse confidential information. However, the adoption of the theory also was motivated by the broader goal of fostering greater investor confidence in the capitals

---

<sup>15</sup> U.S. v. O'Hagan, 521 U.S. 642, 652 (1997).

<sup>16</sup> *Salman v. U.S.*, 580 U.S. 39, 46 (2016) (observing that "the parties do not dispute that *Dirks*'s personal-benefit analysis applies in both classical and misappropriation cases").



market. According to the court, “[a]lthough informational disparity is inevitable in the securities markets, investors likely would hesitate to venture their capital in a market where trading based on misappropriated nonpublic information is unchecked by law. An investor’s informational disadvantage vis-à-vis a misappropriator ... stems from contrivance, not luck; it is a disadvantage that cannot be overcome with research or skill... [C]onsidering the inhibiting impact on market participation of trading on misappropriated information ... it makes scant sense to hold a lawyer like O’Hagan a Section 10(b) violator if he works for a law firm representing the target of a tender offer, but not if he works for a law firm representing the bidder.”<sup>17</sup>

The possibility that some version of the misappropriation theory could form the basis of the insider trading prohibition under Rule 10b-5 was raised in *Chiarella*, and some justices in fact supported that idea.<sup>18</sup> However, the court did not set any precedent in this regard because the majority held that the jury had not been charged properly with respect to a violation of Rule 10b-5 under the theory. Subsequently, some lower courts endorsed the theory,<sup>19</sup> others rejected it,<sup>20</sup> and the Supreme Court itself split when it had an opportunity to take a position.<sup>21</sup> *O’Hagan* thus resolved the uncertainty that had emerged in this area.

In addition to adopting the misappropriation theory, *O’Hagan* upheld Rule 14e-3, concluding that the rule was a proper exercise of the authority that the Exchange Act vests on the SEC.<sup>22</sup>

---

<sup>17</sup> U.S. v. O’Hagan, 521 U.S. 642, 658-59, 674 (1997).

<sup>18</sup> In his concurring opinion, Justice Stevens advocated the version of the misappropriation theory that was subsequently adopted in *O’Hagan*, arguing that it would be reasonable to conclude that *Chiarella* engaged in unlawful insider trading because he breached a duty of silence he owed to those who entrusted him with confidential information. Chief Justice Burger advocated a broader theory, which would not require a confidential relationship between the person that misused the information and the source. According to Chief Justice Burger, although the parties to a business transaction can generally abstain from disclosing material facts to the other party, that general rule “should give way when an informational advantage is obtained, not by superior experience, foresight, or industry, but by some unlawful means.” See *Chiarella v. U. S.*, 445 U.S. 222, 239–40 (1980).

<sup>19</sup> See *United States v. Newman*, 664 F.2d 12 (2d Cir. 1981); *Rothberg v. Rosenbloom*, 771 F.2d 818, 823 (3d Cir. 1985); *SEC v. Clark*, 915 F.2d 439, 449 (9th Cir. 1990); *SEC v. Cherif*, 933 F.2d 403, 410 (7th Cir. 1991); *United States v. Carpenter*, 791 F.2d 1024, 1025-26, 1029 (2d Cir. 1986).

<sup>20</sup> See *United States v. Bryan*, 58 F.3d 933, 944 (4th Cir. 1995); *United States v. O’Hagan*, 92 F.3d 612, 614, 620 (8th Cir. 1996), *rev’d*, 521 U.S. 642 (1997).

<sup>21</sup> In *United States v. Carpenter*, a Wall Street Journal reporter and his tippee traded on the basis of information that was going to appear in a column prepared by the reporter. The Second Circuit relied on the misappropriation theory to hold the defendants liable under Rule 10b-5 and also concluded that the defendants violated the federal mail and wire fraud statutes. *United States v. Carpenter*, 791 F.2d 1024, 1025-26, 1029 (2d Cir. 1986). The Supreme Court unanimously affirmed the convictions for mail and wire fraud but split 4-4 on the validity of the misappropriation theory. As a result, the court affirmed the convictions but did not set any precedent with respect to the theory. *Carpenter v. United States*, 484 U.S. 19, 24 (1987).

<sup>22</sup> U.S. v. O’Hagan, 521 U.S. 642, 666 (1997).

After *O'Hagan*, therefore, it became clear that in the particular case of tender offers, the SEC could rely not only on the misappropriation theory, but also on Rule 14-3 – which, as mentioned, also eliminates the need of a confidential relationship between the person that misuses MNPI and the source of information.

As mentioned earlier, and as various commentators have noted, the misappropriation theory was a major expansion of the insider trading prohibition (e.g., Seligman, 1998; Bainbridge, 2012; Nagy, 2009). The adoption of the doctrine therefore presents a unique opportunity to examine the relationship between the scope of the prohibition and the incidence of insider trading, which this paper exploits.

### 3. Literature review

The literature on insider trading is abundant. There are several studies on the justifications and consequences of the insider trading prohibition, the boundaries of the prohibition, the historical and economic factors that have shaped the prohibition, and whether insider trading should be regulated by law or by private mechanisms.<sup>23</sup> However, the empirical evidence on how effectively the legal system deters insider trading is significantly thinner.

Some studies examine trades reported to the SEC by registered insiders (directors, officers, and relatively large shareholders)<sup>24</sup> before the announcement of M&A (or, in some cases, earnings announcements). Within this line of research, Arshadi and Eyssell (1991) study the effect of the Insider Trading Sanctions Act of 1984 (ITSA), which imposed monetary penalties of up to three times the profits made or the losses avoided through unlawful insider trading. Using a sample of tender offers in the 1967-1987 period, they find that registered insiders changed from being net buyers pre-ITSA to being net sellers post-ITSA. In other words, while insiders bought more shares than they sold during the weeks preceding a tender offer in the pre-ITSA years, this pattern disappeared after ITSA. Seyhun (1992) extends this analysis by examining not only tender offers, but also earnings announcements (during the 1975-1989 period), and confirms

---

<sup>23</sup> See, for example, Ayres and Bankman (2001); Ayres and Choi (2002); Anand, Choi, Pritchard, and Puri (2019); Bainbridge (1986; 1995; 1999; 2012; 2021); Bebchuk (1994); Carlton and Fischel (1993); Coffee (2013); Cox (1986); Easterbrook (1981); Fisch (1991; 2016; 2018); Fox (1992; 1994); Glosten, Fox, and Rauterberg (2018); Goshen and Parchomovsky (2001); Gubler (2017); Jagolinzer, Henderson, and Muller (2015); Karmel (2015); Kim (2013; 2014); Langevoort (2006; 2020a; 2020b; 2023); Nagy (2009); Park (2018); Pritchard (2016; 2018); Verstein (2016; 2018; 2020).

<sup>24</sup> Section 16(a) of the Securities Exchange Act requires “registered insiders” to report their trades in the shares of their companies. For the purposes of this provision specifically, a “registered insider” means a director, an officer, or a shareholder who owns more than 10% of the shares of the corporation.

that insiders' net purchases before tender offers declined post-ITSA. Garfinkel (1997) examines the impact of a related regulatory change, the Insider Trading and Securities Fraud Enforcement Act (ITSFEA) of 1988, which introduced three reforms: an increase in the maximum civil penalty for insider trading to the greater of \$1 million or three times the profit gained or the loss avoided by the violator of the prohibition, an increase in the maximum prison time from 5 to 10 years, and the creation of a whistleblower program that allowed whistleblowers to collect 10% of the insider's trading profits. For a sample of earnings announcements between 1984 and 1991, Garfinkel finds that after ITSFEA, insiders more often postponed their sales until after negative earnings announcements became public.

Agrawal and Jaffe (1995) examine a sample of mergers between 1941 and 1961, a period during which the main mechanism to prevent insider trading was the "short-swing rule" – which mandates disgorgement of profits made (or losses avoided) by directors and officers that engage in a purchase and subsequent sale (or a sale and subsequent purchase) of securities within a six-month period. The authors find that insiders reduced their stock purchases in the target in the months preceding the announcement of the transactions, which suggests that the rule had some deterrent effect.<sup>25</sup>

Agrawal and Nasser (2012) compare insider trades in takeover targets with insider trades in companies not involved in takeovers in a more recent period (1988-2006). Their results show that while insiders of takeover targets reduced their purchases below normal levels (that is, in relation to trades in non-targets), they reduced their sales even more, thus increasing their net purchases.<sup>26</sup>

---

<sup>25</sup> The short-swing rule was enacted as part of the Securities Exchange Act of 1934 (Section 16(b)) and was the main instrument to prevent insider trading in the period examined by the authors because the SEC only began enforcing Rule 10b-5 with its *Cady, Roberts* action in 1961 (*In the Matter of Cady, Roberts & Co.*, 40 S.E.C. 907 (S.E.C. Release No. Nov. 8, 1961)). The rule forces insiders to disgorge gains from pre-merger purchases that were within six months of the merger because a merger requires that all the shareholders sell their shares to the buyer of the target. However, the rule has some important limitations. The most basic one is that if the purchase of the shares is more than six months apart from the merger, then the insider is not captured by the rule. In addition, enforcement of the rule may be difficult if the trades were not reported to the SEC. There was also uncertainty about the validity of the rule in the context of sales pursuant to merger agreements because some defendants argued that a merger involves an involuntary sale of a security; however, that argument was ultimately rejected by courts (*Kern County Land Co. v. Occidental Petroleum Corp.*, 93 S.Ct. 1736, 36 L.Ed.2d 503 (1973)). Today, Rule 16b-7 exempts only a very limited set of mergers from the short-swing rule.

<sup>26</sup> Some studies study insider trades within specific types of deals. Harlow and Howe (1993) focus on management buyouts ("MBOs") because they hypothesize that the potential for insider trading is stronger in those transactions. The reason is that like any individual who trades on MNPI, insiders may sell the shares at the higher post-announcement price (even if the transaction does not ultimately close); however, in the case of MBOs, the acquisition of shares before the announcement of the merger also has the effect of reducing the number of shares that the management team must purchase at the buyout price. In line with that prediction, for the 1980-1989

One important limitation of these studies is that they only capture trades reported to the SEC by registered insiders – they do not capture trades that were not reported and trades by non-insiders. Several studies therefore examine indications of illegal insider trading by examining whether M&A targets experience abnormally high returns before the announcement of the transactions – and the answer to this question is consistently positive (Keown and Pinkerton, 1981; Sanders and Zdanowicz, 1992; Kedia and Zhou, 2009).<sup>27</sup> Keown and Pinkerton (1981), for example, conclude that their “results confirm ... what most traders already know. Merger announcements are poorly held secrets, and trading on this non-public information abounds.” Jarrell and Poulsen (1989) show that public rumors about an upcoming deal explain part of the pre-announcement returns. However, Meubroek (1992) shows that insider trading remains a key determinant: using a sample of insider trades that were prosecuted by the SEC during the 1980-1989 period, she finds that the pre-announcement returns took place predominantly during the days on which the prosecuted insider trading took place.

Within the same line of research, some studies examine the relationship between the law and pre-announcement returns. Del Guercio, Odders-White, and Ready (2017) analyze the impact of SEC enforcement on run-ups in M&A and earnings announcements, and find that both types of run-ups were negatively associated with resource-based measures of enforcement intensity. Chira and Madura (2013) focus on the impact on M&A target run-ups of the 2009 *Galleon* case – a case that received significant attention in the media and that the authors (and other commentators) interpreted as signaling greater scrutiny by the SEC. Confirming the notion that strong enforcement can have a deterrent effect on insider trading, they found that run-ups declined after the case. Patel (2019) examined the Second Circuit’s 2014 decision in *United States v. Newman*,<sup>28</sup> which attempted to limit the scope of tippee liability until the Supreme Court rejected that attempt in *Salman v. United States*.<sup>29</sup> Consistent with the view that relaxing

---

period, Harlow and Howe find an increase in the net number of insiders buying (that is, the number buying minus the number selling) during the year preceding the announcement of the MBO; in contrast, they did not find a similar pattern for other buyouts. Madison et al. (2004) focus on bank mergers because they argue that enforcement authorities might be especially interested in preserving the integrity of the capital market in the banking sector, which can enhance the quality of enforcement in that sector. Using a sample of deals for the 1991-1997 period, the authors find that insiders reduced their purchases of shares before the transactions – but they also reduced their sales significantly.

<sup>27</sup> Although the literature typically examines run-ups in M&A (or earnings announcements), some studies focus on other material events and also find evidence of insider trading. See, e.g., Cohen, Jackson, and Mitts (2016); Mitts and Talley (2019); Bolandnazar, Jackson, Jiang, and Mitts (2020).

<sup>28</sup> 773 F.3d 438 (2d Cir. 2014).

<sup>29</sup> 137 S. Ct. 420, 420 (2016).

the insider trading prohibition can facilitate insider trading, Patel finds an increase in M&A run-ups in the months between the two court decisions.<sup>30</sup>

In addition to the studies described above, there are various cross-country studies that examine the relationship between the first time that the insider trading prohibition was enforced in a country and various capital-market variables: the cost of capital, liquidity, and proxies for the quality of the information environment (that is, the extent to which trading relies on collection of information about securities issuers). In general, these studies suggest that the cost of capital fell, liquidity increased, and the information environment improved after the insider trading prohibition became enforced (Bhattacharya and Daouk 2002; Bushman, Piotroski, and Smith 2005; DeFond, Hung, and Trezevant 2007; Fernandes and Ferreira 2009; Aitken, Cumming, and Zhan 2015).

As shown in this section, a large part of the literature that tries to identify whether insider trading law deters insider trading is based on trades reported by insiders (which, as mentioned, is an approach that does not capture unreported trades or trades by third parties); and even within the literature that focuses on run-ups, there is no evidence on the impact of the misappropriation theory (even though the doctrine represents, as discussed earlier, one of the most significant expansions of the insider trading prohibition since the prohibition was first considered by the Supreme Court). This paper therefore contributes to filling this gap in the literature.

---

<sup>30</sup> As mentioned earlier, in *Dirks*, the Supreme Court held that for a tippee of MNPI to be liable for insider trading, two conditions must be met: the tipper passed the MNPI in breach of a duty of confidentiality and for a personal benefit, and the tippee knows or should know that the tipper breached a duty of confidentiality. And for the purposes of the first condition, if a tipper discloses confidential information to a “trading relative or friend,” then the disclosure is considered to have been made for a “personal benefit.” *Dirks v. SEC*, 463 U.S. 646 (1983). The Second Circuit in *Newman* interpreted these conditions in a way that enhanced the burden of proof on the government. With respect to the first condition, the Second Circuit held that the inference that a tipper personally benefited from the disclosure of MNPI when he or she passed the information to a trading relative or friend was impermissible unless the tipper and the tippee had a “meaningfully close personal relationship,” and there was an exchange between them that was “objective” and “consequential,” and that represented “at least a potential gain of a pecuniary or similarly valuable nature” for the tipper. With respect to the second condition, the Second Circuit held that it was not enough for the government to prove that the tippee had reason to know that the tipper breached a duty of confidentiality; according to the court, the government should also show that the tippee had reason to know that the tipper received a personal benefit for the disclosure of the information. *United States v. Newman*, 773 F.3d 438 (2d Cir. 2014). Shortly after *Newman*, however, the Ninth Circuit rejected some aspects of the decision, and that posture was affirmed by the Supreme Court in its *Salman* decision. According to the Supreme Court, passing MNPI to a trading relative or friend was enough to establish a “personal benefit” for the tipper. In addition, the court rejected the argument that the government needed to prove that the tipper received a tangible benefit in exchange for the information. The Supreme Court did not address the Second Circuit’s argument that the tippee must have known of the tipper’s personal benefit, or the argument that the tipper and the tippee had to have a “meaningfully close personal relationship.” *Salman v. U.S.*, 580 U.S. 39 (2016).

#### 4. Methodology

Because the misappropriation theory significantly expanded the scope of the insider trading prohibition, it is reasonable to expect that trading on MNPI decreased after the adoption of the theory. As discussed earlier, this paper tests this hypothesis by examining M&A target run-ups before and after the adoption of the theory. Because mergers and acquisitions typically involve the payment of a substantial premium for the shares of the target company, the public announcement of the transaction almost always leads to a significant increase in the price of the company, which means that it is very likely that individuals that possess confidential information about the transaction will make significant profits (or avoid significant losses) if they buy shares in the target company (or if they refrain from selling shares they were planning to sell) before the transaction is announced. In this light, a significant pre-announcement increase in the price of the target can be reasonably interpreted as indirect evidence of insider trading (Keown and Pinkerton, 1981; Meulbroek, 1992; Bhattacharya, Daouk, Jorgenson, and Kehr, 2000; Del Guercio, Odders-White, and Ready, 2017).

To account for general market fluctuations that may affect the pre-announcement returns, I compute the run-ups as the cumulative abnormal returns (CARs) for the stock of the target company before the announcement of the transaction – that is, as the difference between the returns of the target and the returns of the Center for Research in Securities Pricing (CRSP) index. I use the value-weighted CRSP index in the baseline estimations, but the results are similar with the equal-weighted version of the index. In addition, the time window to compute the run-ups is 30 days before the announcement of each transaction, but I obtain similar results with longer windows.

It is possible that the valuation of M&A targets changed during the sample period, which may affect the average run-ups even if insider trading levels remained similar after the adoption of the misappropriation theory. Completely ruling out this possibility is difficult because *O'Hagan* applies to all public companies, so there is no natural set of firms that could work as a control group. However, to mitigate this concern, in addition to controlling for observable factors that may affect the valuation of the targets, I use the stock market reaction to the public announcement of the transactions as a benchmark for the run-ups. If the run-ups changed after *O'Hagan* because the misappropriation theory disincentivized trading on MNPI, then those returns should decrease after the decision *in relation to the announcement returns* because the

misappropriation theory is supposed to have affected the pre-announcement returns but not the announcement returns. In this sense, I measure the impact of *O'Hagan* using a difference-in-differences estimator: the post-*O'Hagan* change in the run-ups relative to the post-*O'Hagan* change in the announcement returns.

To operationalize the difference-in-differences analysis, I create a panel of transactions with two periods per transaction: one before the announcement of the deal and another one at the announcement. The dependent variable in the panel is the returns of the target during the corresponding period, and I use an indicator variable, *Undisclosed*, to denote whether an observation corresponds to the pre-announcement period (in which case the variable takes the value of 1) or the announcement period (in which case the variable is 0). In addition, I create another indicator variable, *Post*, which takes the value of 1 for transactions announced after June 25, 1997, the date of the *O'Hagan* decision, and 0 otherwise. The main independent variable of interest is therefore *Undisclosed*×*Post*, which measures the post-*O'Hagan* change in the pre-announcement returns (i.e., the run-up) in relation to the announcement returns.

The regressions also include transaction fixed effects, which account for transaction-invariant characteristics that may affect the pre-announcement and the announcement returns. However, as an alternative to this specification, I run the regressions using a random-effects model (or, alternatively, an ordinary least squares (OLS) model) in which I control explicitly for factors that may affect the returns. These factors include the target's size (market capitalization), profitability (return on equity or ROE), sales growth, liquidity (the ratio of cash to assets), leverage (the ratio of debt to assets), and industry (the one-digit Standard Industry Classification Code), as well as controls for public rumors about the transaction, the buyer's toehold, and whether the transaction was friendly or hostile.<sup>31</sup>

I examine the impact of *O'Hagan* using a sample period of five years before the decision, plus the year of the decision, and a symmetric period afterwards (that is, twelve years in total). I use

---

<sup>31</sup> Public rumors about the deal can exert upward pressure on the run-up because they may arise interest in the target. The toehold may affect the run-up because it may lead investors to infer that the target is undervalued or that a merger or acquisition is likely. The attitude of the buyer (hostile versus friendly) may matter because in friendly (i.e., negotiated) deals, there is more sharing of information between the advisors of the bidder and the target, which creates greater opportunities for leakage of information. See Jarrell and Poulsen (1989). It is worth noting, however, that hostile deals are rare today, so the distinction between friendly and hostile bids does not have much effect on the data.

a relatively short time window to reduce the probability of capturing confounding factors, but the results hold if I use a longer window.

The data come from various sources. The M&A transactions come from the Refinitiv, stock market prices are from the Center for Research in Securities Prices (CRSP), and the companies' financials come from Compustat and Refinitiv.

## 5. Results

Table 1 shows descriptive statistics. The main variable of interest in the table is the difference between the run-ups and the announcement returns – a difference I denote as the “relative run-ups.” As shown in the table, the average relative run-up before *O'Hagan* was -7 percentage points – that is, run-ups were 7 percentage points lower than the announcement returns. After the decision, the difference became -9. This means that *O'Hagan* was associated with a decline in relative run-ups of 2 percentage points, which provides preliminary evidence that the misappropriation theory might have exerted downward pressure on insider trading. The table also shows that there were other deal characteristics that changed after *O'Hagan*, so, as discussed before, I mitigate the effect of those factors not only by adjusting the run-ups for the announcement returns, but also by including controls in the multivariate analysis.

Table 2 shows the regression results. As discussed in the methodology section, the regressions take the form of panel regressions in which there are two periods per transaction (the pre-announcement period and the announcement period), and the dependent variable is the returns during the corresponding period. The table shows results for three models: Model 1 is the baseline model, which includes transaction fixed effects and standard errors clustered at the transaction level; Model 2 clusters the errors at the industry level to account for industry variation; and Model 3 employs industry-by-time fixed effects because the returns around M&A may cluster at the industry level, and the industry effects may in turn change over time. As shown in the table, the interaction *Undisclosed*×*Post* was negative and statistically significant in all the estimations, confirming that the pre-announcement returns (that is, the run-ups) declined significantly in relation to the announcement returns. The coefficient of the variable was 0.029, which is similar to the coefficient in the univariate analysis.

Figure 1 explores the relationship between the run-ups and the announcement returns over time. As shown, the run-ups and the announcement returns followed roughly parallel trends before



*O'Hagan*, but after the decision, the relative run-ups declined immediately and significantly. The figure therefore lends additional support to the idea that the post-*O'Hagan* decline in the relative run-ups can be plausibly attributed to the misappropriation theory.

Table 3 shows the results of three sensitivity analyses. In the first one (Model 1), I run the regressions using a longer sample period. As mentioned earlier, the baseline period is relatively short to minimize the effect of potential confounding factors, but I repeat the analysis with a longer period (which doubles the size of the baseline post-*O'Hagan* period) to examine the long-term persistence of the results. In Model 2, I compute the run-up for each transaction using a longer window of 60 days prior to the announcement of the deal. The disadvantage of this approach is that it increases the likelihood of picking factors unrelated to the transactions, but the advantage is that it may capture insider trading that was not captured by the baseline period. In Model 3, I replace the fixed-effects model with a random-effects model, which explicitly controls for observable factors that may affect the returns. These factors include, as mentioned earlier, the size, profitability, sales growth, liquidity, leverage, and industry of the target, as well as controls for public rumors about the transaction, the buyer's toehold, and whether the transaction was friendly or hostile. As shown in the table, the results of all these analyses were roughly similar to the baseline regressions – and, moreover, the magnitude of the effect becomes larger in some of them.

Notwithstanding the consistency of the results, I note some inherent limitations of the empirical analysis. First, in the particular case of tender offers (approximately 18% of the sample), it is difficult to disentangle the effect of the adoption of the misappropriation theory and the endorsement of Rule 14e-3. As noted in Section 2, like the misappropriation theory, Rule 14e-3 expanded the range of individuals that were prohibited from trading on MNPI (in the context of tender offers), but the rule was controversial since its inception because it was inconsistent with the classical theory.<sup>32</sup> In *O'Hagan*, the Supreme Court not only adopted the misappropriation theory, but also upheld Rule 14e-3, which simultaneity complicates the separation of the impact of the two events. However, I note that the implications of both events are similar (that is, that broadening the universe of individuals captured by the insider trading

---

<sup>32</sup> As discussed before, in fact, at least one court explicitly rejected the validity of the rule. See *U.S. v. O'Hagan*, 92 F.3d 612, 614 (8th Cir. 1996), rev'd, 521 U.S. 642 (1997).

doctrine can have the effect of reducing the incidence of insider trading), so separating their individual effect becomes somewhat less urgent.

Second, before *O'Hagan* adopted the misappropriation theory, some circuit courts demonstrated their willingness to endorse the theory.<sup>33</sup> Similar to what occurred with Rule 14e-3, that posture was controversial (as illustrated by the circuit court decisions that explicitly rejected the validity of the theory<sup>34</sup> and the split within the Supreme Court on the issue<sup>35</sup>), but the existence of cases that endorsed the theory suggests that *O'Hagan* was not an entirely clean event. I therefore acknowledge the possibility of bias in the results. However, I note that such bias would have the effect of muting the effect of *O'Hagan*, which means that the estimated impact of the decision presented in this paper might in fact be conservative.

Third, there are unobservable factors that interact with the misappropriation theory and without which the theory probably would not have significant effects. A particularly important factor is the enforcement environment in which the theory operates (e.g., Del Guercio, Odders-White, and Ready, 2017; Chira and Madura, 2013). The SEC in particular devotes significant resources to prosecute insider trading and has in place surveillance systems to monitor the practice, which (at least to some extent) creates a threat that a violation of the law will be penalized. I therefore emphasize that while this paper suggests that there is a negative relationship between the breadth of the doctrine that governs insider trading and the incidence of the practice, that relationship probably will not materialize in contexts with low enforcement intensity.

And fourth, as discussed earlier, run-ups are a common proxy for insider trading, but there are other factors that can affect those returns. I try to remove the effect of such other factors by adjusting the run-ups for market fluctuations, controlling for variables that the literature considers important, and employing the announcement returns as a benchmark for the analysis. However, I acknowledge that those are imperfect methods to ensure that pre-announcement returns capture only insider trading.

---

<sup>33</sup> See *United States v. Newman*, 664 F.2d 12 (2d Cir. 1981); *Rothberg v. Rosenbloom*, 771 F.2d 818, 823 (3d Cir. 1985); *SEC v. Clark*, 915 F.2d 439, 449 (9th Cir. 1990); *SEC v. Cherif*, 933 F.2d 403, 410 (7th Cir. 1991); *United States v. Carpenter*, 791 F.2d 1024, 1025-26, 1029 (2d Cir. 1986).

<sup>34</sup> See *United States v. Bryan*, 58 F.3d 933, 944 (4th Cir. 1995); *United States v. O'Hagan*, 92 F.3d 612, 614, 620 (8th Cir. 1996), *rev'd*, 521 U.S. 642 (1997).

<sup>35</sup> *Carpenter v. United States*, 484 U.S. 19 (1987).

## 6. Implications

This paper's empirical evidence suggesting that the misappropriation theory deters insider trading has important economic and doctrinal implications. Perhaps the main economic implication is that the theory can affect the cost of capital, the liquidity of the securities market, and the information environment in which that market operates. As mentioned before, the insider trading prohibition is in large part motivated by two ideas: that outside investors will have low incentives to participate in the capital market if they believe that they are trading with individuals who have an informational advantage derived from misappropriated information, and that this kind of informational disparity can reduce the incentives of outside investors and market professionals to collect information about firms (since the opportunities to profit from that kind of research will be limited). These ideas in turn imply that in a scenario of a strong insider trading prohibition and strong enforcement, the cost of capital will fall (as investors will charge a lower premium for their capital), liquidity will increase (as it will be easier for investors to dispose of their securities), and the information environment will be stronger (which can have the desirable effect of making stock prices reflect more accurately the fundamental value of a company) (Manove, 1989; Ausubel, 1990; Fishman and Hagerty 1992; Khanna, Slezak, and Bradley 1994). Therefore, since the misappropriation theory seems to represent a meaningful doctrinal enhancement, the theory may ultimately contribute to all these capital-market effects.

It is important to emphasize, however, that there are commentators who think that there should be no insider trading prohibition at all because insider trading can lead to more informative prices (e.g., Manne, 1966; Carlton and Fischel, 1982; 1983). According to these commentators, if insiders can trade on non-public information, then that information will be more quickly incorporated into securities prices and therefore prices will be more efficient, not less, at reflecting the fundamental value of a company (e.g., Manne, 1966; Carlton and Fischel, 1982; 1983). In this sense, from the perspective of these commentators, the insider trading prohibition is economically undesirable.<sup>36</sup>

Given this debate, I acknowledge that the ultimate economic consequences of the misappropriation theory can be controversial. However, some observations are noteworthy.

---

<sup>36</sup> Some commentators have pointed out, however, that there are reasons to think that eliminating the insider trading prohibition would not lead to more accurate pricing. See, e.g., Kahan (1992).

First, there is empirical evidence that suggests that strong enforcement against insider trading is in fact correlated with a lower cost of capital, higher liquidity, and more informative prices (Bhattacharya and Daouk 2002; Bushman, Piotroski, and Smith 2005; DeFond, Hung, and Trezevant 2007; Fernandes and Ferreira 2009; Aitken, Cumming, and Zhan 2015). In light of this evidence, it becomes even more reasonable to think that the misappropriation theory could ultimately have positive capital-market effects. Second, even ignoring these empirical studies, an important premise behind the arguments offered by both the proponents and the critics of the insider trading prohibition is that the law meaningfully deters insider trading (Del Guercio, Odders-White, and Ready, 2017). Since this paper provides evidence on that common premise, the findings presented here are relevant to both sides of the debate. And third, there are non-economic considerations (such as considerations of fairness or doctrinal coherence) that may justify a strong insider trading prohibition (and therefore the misappropriation theory or even a stronger doctrine) regardless of whether or not the ultimate capital-effects of the prohibition are clear.<sup>37</sup>

In terms of doctrinal implications, the fact that the misappropriation theory appears to deter insider trading suggests that further expansions of the doctrine may have a similar effect. The proponents of these expansions mainly advocate for the elimination of two limitations of the doctrine. The first is that although the theory does not require a fiduciary relationship between a trader (or a tipper of MNPI) and the shareholders of the issuer, it still requires a fiduciary relationship between the person who misuses confidential information and the source of the information (whoever that person is). And the second is that the theory does not subject to liability the “brazen fiduciary” – that is, a person who trades on (or tips) confidential information but discloses his or her intention to do so (e.g., Nagy 2009).

According to the proponents of the reforms, there is no convincing rationale for maintaining these limitations because insider trading by someone who does not have a confidential relationship with the source of the MNPI or by a brazen fiduciary undermines investor

---

<sup>37</sup> For example, some authors think that insider trading should be prohibited because firms have property rights over MNPI, and those rights should be protected even in the absence of evidence that doing so has beneficial effects on the capitals market (Bainbridge, 2012). Similarly, the Supreme Court in *O'Hagan* found no doctrinal justification for limiting the universe of individuals covered by the insider trading prohibition to those who have a fiduciary relationship with the shareholders of the issuer. *U.S. v. O'Hagan*, 521 U.S. 642, 658-59, 674 (1997). Describing all the justifications for the insider trading prohibition that do not rely on the implications of the prohibition for the securities market is beyond the scope of this paper. However, theories like the one proposed by Bainbridge (2012) illustrate that economic considerations are not the only ones that determine whether a strong prohibition is desirable.

confidence (the motivating concern behind *O'Hagan*) as much as secret trading by a fiduciary. In fact, some courts have already signaled their willingness to endorse these reforms,<sup>38</sup> and Congress also took a step in this direction when it adopted Section 807 of the Sarbanes Oxley Act, which provides a criminal insider trading prohibition that does not require a fiduciary relationship with the source of the information.<sup>39</sup>

In light of the results presented here, it seems reasonable to presume that expanding the misappropriation theory along these lines should have a deterrent effect on insider trading; and if deterrence is a desirable goal, then these reforms may be desirable as well. However, as discussed earlier, it is important to keep in mind that the misappropriation theory represented a particularly significant step in the evolution of the insider trading doctrine (which implies that further expansions of the doctrine may not have the same impact), and examining exactly how strong the insider trading prohibition should be is a topic beyond the scope of this paper.

## 7. Conclusion

After more than two decades following the adoption of the misappropriation theory in the Supreme Court's decision in *O'Hagan*, it remains unclear whether the theory (one of the pillars of the insider trading doctrine today) has had any deterrent effect on insider trading. This paper contributes to filling this gap by examining the effect of *O'Hagan* on M&A target run-ups – a common proxy for insider trading. The results show that run-ups fell immediately and significantly after *O'Hagan*, and this result holds after the returns are adjusted for common market fluctuations, observable characteristics of the target companies, and the announcement returns. The results thus suggest that the strength of the insider trading prohibition has a

---

<sup>38</sup> SEC v. Dorozhko, 574 F.3d 42 (2d Cir. 2009) (subjecting to Rule 10b-5 liability a computer hacker who stole confidential information and traded on the information, even though the hacker did not have any relationship of trust and confidence with the source of the information. According to the court, the hacker deceived the source of the information, and deception is the key to trigger liability under Rule 10b-5); SEC v. Rocklage, 470 F.3d 1 (1st Cir. 2006) (suggesting that a trader that discloses his intent to trade on MNPI should not be exempt from liability if the trader acquired the information by another form of deception that does not involve non-disclosure).

<sup>39</sup> Section 807 of the Sarbanes-Oxley Act provides the following: "Whoever knowingly executes, or attempts to execute, a scheme or artifice — (1) to defraud any person in connection with any security of [a public issuer]; or (2) to obtain, by means of false or fraudulent pretenses, representations, or promises, any money or property in connection with the purchase or sale of any security of [a public issuer], shall be fined ... or imprisoned..." As Bainbridge (2012) points out, the language and history of the provision provide little guidance on how exactly it differs from Rule 10b-5. However, the provision has already been interpreted as not requiring a breach of a duty of confidence to trigger liability. U.S. v. Mahaffy, 446 F. Supp. 2d 115 (E.D.N.Y. 2006). A limitation of the rule, however, is that it is only criminal – it is not part of the SEC's toolkit because it cannot be used to bring civil cases.

meaningful effect on the incidence of insider trading, at least in the particular enforcement environment in which the misappropriation theory was adopted.

## References

- Agrawal, Anup, and Jeffrey F. Jaffe. 1995. Does Section 16b deter insider trading by target managers? *Journal of Financial Economics* 39: 295–319.
- Agrawal, Anup, and Nasser. 2012. Insider trading in takeover targets. *Journal of Corporate Finance* 18: 598-625.
- Aitken, Michael, Douglas Cumming, and Feng Zhan. 2015. Exchange trading rules, surveillance and suspected insider trading. *Journal of Corporate Finance* 34: 311-330.
- Anand, Anita, Stephen Choi, and Adam C. Pritchard. 2019. An empirical comparison of insider trading enforcement in Canada and the U.S. *International Review of Law & Economics* 57: 49-59.
- Arshadi, Nasser, and Thomas H. Eysell. 1991. Regulatory deterrence and registered insider trading: The case of tender offers. *Financial Management* 20: 30–39.
- Ausubel, Lawrence M. 1990. Insider trading in a rational expectations economy. *American Economic Review* 80: 1022–1041.
- Ayres, Ian, and Joseph Bankman. 2001. Substitutes for insider trading. *Stanford Law Review* 54 235-294.
- Ayres, Ian, and Stephen Choi. 2002. Internalizing outsider trading. *Michigan Law Review* 101: 313-408.
- Bainbridge, Stephen. 1986. The insider trading prohibition: A legal and economic enigma. *University of Florida Law Review* 38: 35-68.
- Bainbridge, Stephen. 1996. Incorporating state law fiduciary duties into the federal insider trading prohibition. *Washington & Lee Law Review* 52: 1189-1269.
- Bainbridge, Stephen. 1999. Insider trading regulation: The Path dependent choice between property rights and securities fraud. *SMU Law Review* 52: 1589-1652.
- Bainbridge, Stephen. 2021. A critique of the Insider Trading Prohibition Act of 2021. *University of Illinois Law Review Online* 2021: 231-244.
- Bebchuk, Lucian, and Chaim Fershtman. 1994. The effects of insider trading on insider's choice among risky investments. *Journal of Financial and Quantitative Analysis* 29: 1-14.
- Bhattacharya, Utpal, and Hazem Daouk. 2002. The world price of insider trading. *Journal of Finance* 57: 75–108.
- Bhattacharya, Utpal, Hazem Daouk, Brian Jorgenson, and Carl-Heinrich Kehr. 2000. When an event is not an event: The curious case of an emerging market. *Journal of Financial Economics* 55: 69–101.
- Bhattacharya, Utpal. 2014. Insider trading controversies: A literature review. *Annual review of Financial Economics* 6: 385–403.
- Bolandnazar, Mohammadreza, Robert J. Jackson, Jr., Wei Jiang, and Joshua Mitts. 2020. Trading against the random expiration of private information: A natural experiment. *Journal of Finance* 75: 544.

- Bushman, Robert M., Joseph D. Piotroski, and Abbie J. Smith. 2005. Insider trading restrictions and analysts' incentives to follow firms. *Journal of Finance* 60: 35–66.
- Carlton, Dennis W., and Daniel R. Fischel. 1983. The regulation of insider trading. *Stanford Law Review* 35: 857-895.
- Chira, Inga, and Jeff Madura. 2012. Impact of the Galleon case on Informed trading before merger announcements. *Journal of Financial Research* 36: 325-346.
- Coffee, John C. Jr. 2013. Mapping the future of insider trading law: Of boundaries, gaps, and strategies. *Columbia Business Law Review* 2013: 281-317.
- Cohen, Alma, Robert J. Jackson, Jr., and Joshua Mitts. 2016. The 8-K trading gap. *Columbia Law & Economics Working Paper* 524.
- Cox, James D. 1986. Insider trading and contracting: A critical response to the "Chicago School." *Duke Law Journal* 4: 628-659.
- DeFond, Mark, Mingyi Hung, and Robert Trezevant. 2007. Investor protection and the information content of annual earnings announcements: International evidence. *Journal of Accounting and Economics* 43:37–67.
- Del Guercio, Diane , Elizabeth R. Odders-White, and Mark J. Ready. 2017. The deterrent effect of the Securities and Exchange Commission's enforcement intensity on illegal insider trading: Evidence for run-up before bews events. *Journal of Law & Economics* 60: 269-307.
- Easterbrook, Frank H. 1981. Insider trading, secret agents, evidentiary privileges, and the production of information. *Supreme Court Review* 1981: 309-365.
- Fernandes, Nuno, and Miguel A. Ferreira. 2009. Insider trading laws and stock price informativeness. *Review of Financial Studies* 22: 1845–87.
- Fisch, Jill E. 1991. Start making sense: An analysis and proposal for insider trading regulation. *Georgia Law Review* 26: 179-250.
- Fisch, Jill. 2016. Family ties: *Salman* and the scope of insider trading. *Stanford Law Review Online* 69: 46-54.
- Fisch, Jill. 2018. Constructive ambiguity and judicial development of insider trading. *SMU Law Review* 71: 749-766.
- Fishman, Michael J., and Kathleen M. Hagerty. 1992. Insider trading and the efficiency of stock prices. *RAND Journal of Economics* 23:106–22.
- Fox, Merritt B. 1992. Insider trading in a globalizing securities market: Who should regulate what. *Law and Contemporary Problems* 55: 263-302.
- Fox, Merritt B. 1994. Insider trading deterrence versus managerial incentives: A unified theory of Section 16(b). *Michigan Law Review* 92: 2088-2203.
- Fox, Merritt B., Lawrence R. Glosten, and Gabriel Rauterberg. 2018. informed trading and its regulation. *Journal of Corporation Law* 43: 817-898.



- Garfinkel, Jon A. 1997. New evidence on the effects of federal regulations on insider trading: The Insider Trading and Securities Fraud Enforcement Act (ITSFEA). *Journal of Corporate Finance* 3: 89-111.
- Goshen, Zohar, and Gideon Parchomovsky. 2001. On insider trading, markets, and "negative" property rights in information. *Virginia Law Review* 87: 1229-1277.
- Gubler, Zachary J. 2017. A unified theory of insider trading law. *Georgetown Law Journal* 15: 1225-1270.
- Harlow, W. V., and John Howe. 1993. Leveraged buyouts and insider non-trading. *Financial Management* 22: 109-118.
- Henderson, Todd, Alan Jagolinzer, and Karl Muller. 2015. Offensive disclosure: How voluntary disclosure can increase returns from insider trading. *Georgetown Law Journal* 103: 1275-1306.
- Jarrell, Gregg A., and Annette B. Poulsen. 1989. Stock trading before the announcement of tender offers: Insider trading or market anticipation? *Journal of Law, Economics, & Organization* 5: 225-248.
- Kahan, Marcel. 1992. Securities laws and the social costs of "inaccurate" stock prices. *Duke Law Journal* 41: 977-1044.
- Karmel, Roberta S. 2015. The law on insider trading lacks needed definition. *SMU Law Review* 68: 757-770.
- Keown, Arthur J., and John M. Pinkerton. 1981. Merger announcements and insider trading activity: an empirical investigation. *Journal of Finance* 36: 855-869.
- Khanna, Naveen, Steve L. Slezak, and Michael Bradley. 1994. Insider trading, outside search, and resource allocation: Why firms and society may disagree on insider trading restrictions. *Review of Financial Studies* 7:575-608.
- Kim, Sung Hui. 2013. What governmental insider trading teaches us about corporate insider trading, in *Research Handbook on Insider Trading* (edited by Stephen M. Bainbridge, Edward Elgar Publishing).
- Kim, Sung Hui. 2014. Insider trading as private corruption. *UCLA Law Review* 61: 928-1008.
- Langevoort, Donald C. 1995. Words from on high about Rule 10b-5: Chiarella's history, Central Bank's future. *Delaware Journal of Corporate Law* 20: 865-897
- Langevoort, Donald C. 2006. Federalism in corporate/securities law: Reflections on Delaware, California, and state regulation of insider trading. *U.S.F. Law Review* 40: 879-892.
- Langevoort, Donald C. 2020a. Insider trading: regulation, enforcement and prevention. St. Paul, Minn.: West.
- Langevoort, Donald C. 2020b. Watching insider trading law wobble: *Obus, Newman, Salman, two Martomas, and a Blaszcak*. *Fordham Law Review* 89: 507-528.
- Langevoort, Donald C. 2023. What were they thinking? State of mind puzzles in insider trading. *Georgetown University Law Center Working Paper* 2496.
- Leland, Hayne. 1992. Insider trading: Should it be prohibited? *Journal of Political Economy* 100: 859-887.

- Manne, Henry G. 1966. *Insider trading and the stock market*. New York: Free Press.
- Manove, Michael. 1989. The harm from insider trading and informed speculation. *Quarterly Journal of Economics* 104: 823–846.
- Meulbroek, Lisa K., 1992. An empirical analysis of illegal insider trading. *Journal of Finance* 47: 1661-1699.
- Mitts, Joshua, and Eric Talley. 2019. Informed trading and cybersecurity breaches. *Harvard Business Law Review* 9: 1-51.
- Nagy, Donna. 2009. Insider trading and the gradual demise of fiduciary principles. *Iowa Law Review* 94: 1314-1379.
- Park, James. 2018. Insider trading and the integrity of mandatory disclosure. *Wisconsin Law Review* 2018: 1133-1191.
- Pritchard, Adam C. 1998. *United States v. O'Hagan*: Agency law and Justice Powell's legacy for the law of insider trading. *Boston University Law Review* 78: 13- 58.
- Pritchard, Adam C. 2003. Justice Lewis F. Powell, Jr., and the Counterrevolution in the Federal Securities Laws. *Duke Law Journal* 52: 841-949.
- Pritchard, Adam C. 2016. The SEC, administrative usurpation, and insider trading. *Stanford Law Review Online* 69: 55-63.
- Pritchard, Adam C. 2018. Insider trading law and the ambiguous quest for edge. *Michigan Law Review* 116: 945-957.
- Sanders, Ralph W., and John S. Zdanowicz. 1992. Target firm abnormal returns and trading volume around the initiation of change in control transactions. *Journal of Financial Quantitative Analysis* 27: 109-129.
- Seligman, Joel. 1998. A mature synthesis: *O'Hagan* resolves insider trading's most vexing problems. *Delaware Journal of Corporate Law* 23: 1-28.
- Seyhun, H. Nejat. 1992. The effectiveness of the insider-trading sanctions. *Journal of Law & Economics* 35: 149–182.
- Verstein, Andrew. 2016. Insider trading in commodities markets. *Virginia Law Review* 102: 447-500.
- Verstein, Andrew. 2018. Insider tainting: Strategic tipping with material non-public information. *Northwestern University Law Review* 112: 725-786.
- Verstein, Andrew. 2020. Mixed motives insider trading. *Iowa Law Review* 106: 1253-1314.

**Table 1**  
**Descriptive statistics**

Table 1 presents summary statistics before and after *O'Hagan*. The key variable of interest is the *relative run-up*, which is the difference between the run-ups and the announcement returns of a takeover bid. The appendix contains additional details about this variable and the definition of the remaining variables. The tests of statistical significance are *t*-tests of mean differences. The coefficients of the differences may be slightly different than the differences of the mean values shown in the table due to rounding. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Pre- <i>O'Hagan</i>				Post- <i>O'Hagan</i>				Difference
	Mean	Median	S.D.	N	Mean	Median	S.D.	N	
Relative run-up	-0.07	-0.06	0.25	2153	-0.09	-0.08	0.27	3494	-0.02***
Log(mcap)	4.54	4.52	1.89	2153	4.91	4.80	1.80	3494	0.37***
ROE	-0.06	0.03	0.54	2153	-0.14	0.02	0.71	3494	-0.08***
Sales growth	0.06	0.06	0.33	2153	0.08	0.08	0.37	3494	0.02*
Liquidity	0.29	0.05	0.70	2153	0.15	0.05	0.31	3494	-0.14***
Leverage	0.33	0.26	0.32	2153	0.28	0.21	0.29	3494	-0.05***
Hostile	0.09	0.00	0.28	2153	0.02	0.00	0.13	3494	-0.07***
Toehold	0.05	0.00	0.15	2153	0.05	0.00	0.16	3494	0.00

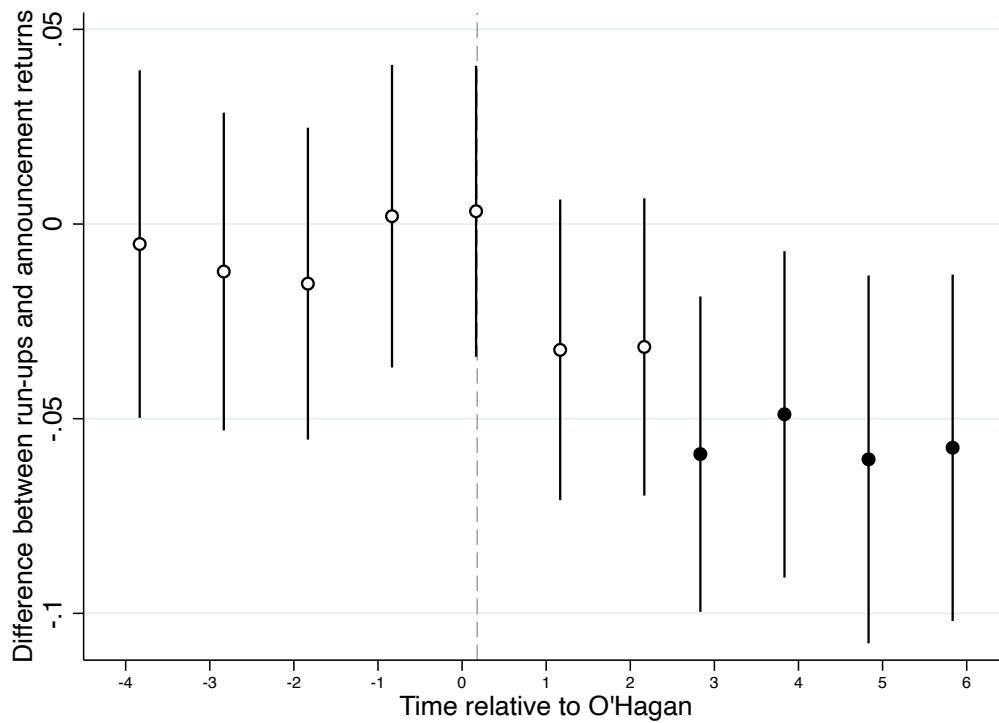
**Table 2**  
**Regression results**

Table 2 presents regression results. The dependent variable is the returns of the target shareholders in takeover bids. For each transaction, I measure the returns in two periods (before and after the announcement of the transaction), and therefore the dataset takes the form of a panel with two observations per transaction. The variable *Undisclosed* takes the value of 1 for the period during which the transaction was undisclosed and zero for the days surrounding the announcement, and therefore this variable identifies the portion of the returns that consist of the run-up. *Post* is a variable that takes the value of 1 if a transaction was announced after *O'Hagan* and zero otherwise. The interaction *Undisclosed*×*Post* thus captures the change in the run-ups in relation to the announcement returns after *O'Hagan*. All the models include fixed effects at the transaction level. Other characteristics of the target and the deal are not included explicitly in the regressions because they are collinear with the transaction fixed effects. The *t*-statistics are in parentheses and \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Variable	(1)	(2)	(3)
<i>Undisclosed</i> × <i>Post</i>	-0.029*** (-4.22)	-0.029*** (-5.25)	-0.029*** (-2.96)
R-squared	0.155	0.155	0.155
N	11294	11294	11294

**Figure 1**  
**Evolution of relative run-ups**

Figure 1 shows the evolution over time of the relative run-ups (i.e., the run-ups minus the announcement returns). Each circle represents the difference in relative run-ups between the first year in the sample and the corresponding year. Black circles denote a difference that is statistically significant at least at the 5% level. The reference line is 1997, the year of the Supreme Court decision in *O'Hagan*.



**Table 3**  
**Sensitivity analyses**

Table 3 shows sensitivity analyses. Model 1 shows regressions with a post-*O'Hagan* period that is twice as large as the baseline period. Model 2 replaces the run-up of 30 days prior to the announcement of the transaction with a 60-day run-up. Model 3 replaces the fixed-effects model with a random-effects model and includes explicit controls for target and deal characteristics. These controls include target's size (market capitalization), profitability (ROE), sales growth, leverage, and liquidity, as well as the toehold and whether the transaction was friendly or hostile. The *t*-statistics are in parentheses and \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Variable	(1)	(2)	(3)
<i>Undisclosed</i> × <i>Post</i>	-0.042*** (-6.59)	-0.042*** (-5.10)	-0.029*** (-4.21)
Transaction fixed effects	Yes	Yes	No
Controls	No	No	Yes
R-squared	0.189	0.073	0.155
N	14346	11272	11294

## Appendix Variable definitions

Variable	Definition
<i>Leverage</i>	Total debt to total assets
<i>Liquidity</i>	Cash and short-term investments to total assets.
<i>Market capitalization</i>	Market capitalization of the target company, which is defined as the number of shares outstanding multiplied by the stock market price of the target thirty days before the announcement of the transaction.
<i>Post</i>	Indicator variable that takes the value of one for observations measured after the <i>O'Hagan</i> decision and zero otherwise
<i>Sales growth</i>	Change in sales in relation to the fiscal year preceding the announcement of the transaction.
<i>Returns</i>	Cumulative abnormal returns around a takeover bid. This value includes the run-up (the abnormal returns for the target during the -30,-1 period in relation to the announcement), and the returns at the announcement of the takeover bid. This is the dependent variable in the regressions.
<i>ROE</i>	Return on equity: ratio of net income to common equity for the 12 months ending on the date of the most recent financial information prior to the announcement of the transaction.
<i>Rumored deal</i>	Indicator variable that takes the value of 1 if there were public rumors about the deal and zero otherwise.
<i>Toehold</i>	Buyer's holding in the target before initiating a merger.
<i>Friendly</i>	Indicator variable that takes the value of 1 if the transaction was friendly and zero if it was hostile.
<i>Undisclosed</i>	Dichotomous variable that takes the value of 1 for the period during which a takeover bid was undisclosed and zero otherwise.