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Trading on the Hill: A Game-Theoretic Analysis of U.S. Congressional Stock Performance

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In celebration of the best three years of my life, and in anticipation of the many yet to follow.

Abstract

This thesis examines the phenomenon of Congressional stock trading in the United States and its implications for market fairness and democratic accountability. We model this phenomenon and the applications it has to the market with game theory, using empirical data to drive our conclusions. The analysis shows that existing disclosure rules and penalties leave a significant margin for lawmakers to trade profitably, while public followers can still capture residual returns.

Enforcement remains limited; however, reputational pressures appear to shape behavior as well. The findings suggest that current frameworks are insufficient, and that reforms such as shorter disclosure windows, stronger penalties, and blind trust requirements would better align Congressional trading with principles of transparency and fairness.

1 Introduction

Congressional stock trading can be considered a form of insider trading when lawmakers make financial decisions based on material, non-public information they gain while practicing their official duties. This reflects the way insider trading works, where corporate insiders can exploit private information in public markets. Insider trading should be avoided since markets are supposed to be a level playing field, where everyone has access to the same information., when this is not the case it leads to information asymmetry. Insider trading directly distorts incentives since insiders can use information for personal gain instead of serving shareholders. In the case of Congress there is a particular conflict of interest since, if lawmakers can profit from their policy choices, they might pass or block legislation not based on the public interest, but rather on their personal gain.

Stock trading in Congress has gained strong public interest in recent years, after reports and watchdog platforms revealed that lawmakers frequently outperformed the market, often shortly after receiving non-public policy information. While Congress members are supposed to serve the American people to the best of their abilities, the fact that they are allowed to trade on the stock market while they take part in policies that can directly affect their personal wealth raises some concerns and indicates a conflict of interest where lawmakers may take part in laws that benefit them personally rather than America as a whole. Lawmakers feeling permitted to trade on the market may decrease public trust in government institutions which is problematic in a country which is the world's oldest continuous constitutional democracy.

Throughout this thesis we will be analyzing Congressional trading behavior and the effect it has on the market. We will model scenarios using game theory, a study of strategic decision making where players choose actions based on anticipated reactions from others. We will focus on the post-2012 era since some regulation was put in place in 2012 with the STOCK Act, which we will introduce in Chapter 2, we will then analyze the impact and the limitations of this Act in further detail.

Prior to 2012 there was essentially no regulation and rules that should be applied in theory but were not in reality. After 2012, official disclosures were mandated through Periodic Transaction Reports (PTRs), penalties were also introduced. Since 2012, not

much has changed regarding the legality of Congress trading despite various efforts being pushed.

In this thesis we will be evaluating whether the STOCK Act has been effective in changing the behavior of lawmakers. We use game theory to model Congress members' decision making under current versus proposed regulations. We use empirical data from academic papers to measure abnormal returns and enforcement; this data is applied to the models we will establish in Chapter 3. The proposed game setting throughout this thesis includes two players, Player 1 being the legislator with information unavailable to the public, and Player 2 being the public which can copy trades once the PTR is available. The following chapter turns to empirical proof of the concepts proposed in Chapter 3. Finally, Chapter 5 develops policy scenarios and welfare implications, we will be evaluating how reforms could shift equilibrium behavior.

The theoretical landscapes we will see are also based off real proposals, like shortening the reporting window, increasing fines, or ban individual stock trading through and only authorizing blind trust trading. We will therefore be looking over the current scenario and proposed reforms to then suggest a guide of our own for future improvements.

Next, Chapter 2 outlines the legal setting that shapes incentives.

2 Legal & Institutional Background

2.1 The STOCK Act (2012)

Since data indicated that Congress stock purchases outperformed the market by approximately 5.4% annually, the Stop Trading on Congressional Knowledge (STOCK) Act (2012) sought to strengthen insider-trading prohibitions for members of Congress and their immediate family members. Before 2012, the SEC's extensive anti-fraud Rule 10b-5 and the 1978 Ethics in Government Act's requirement for annual asset disclosures applied to Congressional trades, while House and Senate ethics rules merely cautioned members against abusing confidential information. This suggested that there were no automatic fines, no real-time reporting, and no established court ruling that lawmakers were subject to the insider-trading law. Several fundamental requirements were therefore imposed by the STOCK Act. Members of Congress were now required to submit the Periodic Transaction Report (PTR) within 45 days of the execution of any stock, option, or cryptocurrency transaction worth more than $1,000. The Act also made the trades publicly accessible by requiring PTR disclosures to be posted on the Senate Ethics and House Clerk websites. This also allows web-scraping websites like "QuiverQuant" and "Unusual Whales" to collect data that can be clearly presented to the public. Lastly, the gray area under Rule 10b-5 was clarified when it was stated explicitly that members of Congress are in fact subject to insider-trading law. In addition, the STOCK Act imposed penalties. A $200 late-filing fee for reports that are more than 30 days past due was introduced, along with an additional $200 fee for each extra 30 days past due. Although this has never occurred, insider-trading prosecutions on a criminal or civil level are still theoretically possible.

The STOCK Act penalties are still insignificant, according to recent enforcement data (2022–2024). The House Clerk recorded about 6,100 Periodic Transaction Reports in 2023, but only nine late-filing fines were issued, a detection rate of roughly

0.15%[1]. The 45-day periodic transaction report does not apply to certain important exceptions, such as trades made through a Qualified Blind Trust[2] or covered by a § 13103(i) staff waiver[3]. To address the remaining gaps, members of the 118th Congress have proposed two bipartisan reforms based on that evidence. The Real-Time Transparency Act would increase the late-filing penalty and shorten the Periodic Transaction Report filing window from 45 days to 24 hours, making violations more costly and easier to identify. A companion set of Blind-Trust Acts [4] would go one step further, essentially outlawing direct stock trading while in office by requiring members of Congress, their spouses, and dependent children to place individual securities in a qualified blind trust. In summary, the STOCK Act's $200 penalty and 45-day window leave most incentives unaltered, even though it established long-overdue trade disclosure and a nominal late-fee system. The disparity is highlighted by enforcement data (less than ten fines out of over 6,000 trades in 2023). However, there is growing support for stricter regulations; current Congressional proposals would either shorten the filing window to 24 hours or outright forbid the trading of

[1] This calculation (9 fines divided by 6 100 PTRs) only relies on House Clerk filings, since the Clerk publishes a complete count of PTRs. However, Unusual Whales reports approximately 11 000 total PTRs across both chambers in 2023, with an even lower actual enforcement rate of 0.08%. For caution, this thesis uses the larger House-only figure (0.15%) as a conservative upper bound as it avoids understating enforcement. Therefore, the actual detection rate is likely to be even lower that reported here.

[2] Qualified Blind Trust (QBT): must be pre-approved by the House or Senate Ethics Committee; once assets are transferred, all subsequent trades executed by the independent trustee are exempt from PTR filing.

[3] § 13103(i) Staff waiver: available to senior staff for automatic retirement-plan transactions, broad-based index ETFs, or de minimis trades ($1 000 per year); they are valid for one calendar year and renewable.

[4] Several Blind-Trust Acts have been proposed. In the 118th Congress, parallel bills in each chamber would ban lawmakers from trading individual securities. The House version, the TRUST in Congress Act (H.R. 374), sponsored by Reps. Spanberger (D-VA) and Roy (R-TX), and the Senate counterpart, the Ban Congressional Stock Trading Act (S. 357), sponsored by Sens. Gillibrand (D-NY) and Hawley (R-MO), require every member, spouse, and dependent child to place covered stocks, options, and similar assets in a qualified blind trust within 90 days of taking office. Diversified vehicles such as mutual funds and broad-based ETFs remain permissible. Non-compliance triggers civil penalties of up to $50 000 and public disclosure by the relevant Ethics Committee.

individual stocks through blind trusts. This indicates that some members of Congress are aware of the issue and are acting to resolve it.

2.2 Pre-STOCK Act Landscape

We now examine the legislative environment before 2012, which can be characterized as a legal gray zone, after having examined the STOCK Act (2012). The SEC's Rule 10b-5 technically applied to Congressional trades, but no court had ever examined whether lawmakers had the same "duty of trust or confidence" as corporate insiders. Since they were concerned about conflicts over the separation of powers, the SEC and the Department of Justice refrained from bringing charges against lawmakers.

Furthermore, there was no real-time disclosure, as the reports were completed annually. Members of Congress were required to submit a single annual financial report under the Ethics in Government Act of 1978. As yearly reports were required, trades worth more than $1,000 were listed, but only in large dollar ranges (such as $15,000 to $50,000), and they were frequently reported months after they were executed. Since reports were paper documents that could only be obtained through an on-site inspection or a FOIA (Freedom of Information Act) request, the public also found it extremely difficult to access the trades of members of Congress. This limited public scrutiny.

Additionally, Congress used soft-law ethics rules instead of harsh penalties. Senate Rule 37 and House Rule XXVI § 1 (1995, amended 2007) only warned members not to take advantage of "non-public information gained through official position." Partisan ethics committees handled the alleged violations internally; when sanctions were applied, they were never monetary fines but only a written censure or loss of committee seniority. This toothless enforcement further underscored the pre-2012 legal gray zone around Congressional trading. Additionally, there were no automatic penalties for missing or late annual reports; instead, they triggered reminder letters rather than fines, and although a committee vote could theoretically result in criminal referrals, this was practically unheard of. Prior to 2012, academic research already

alluded to the economic stakes: Ziobrowski et al.'s hand-collected datasets show that calendar-time portfolios replicating lawmakers' purchases earned abnormal returns of about 0.85% per month for Senators (≈ 10.7 pp/year)[5], and 0.55% per month for House members (≈ 6.8 pp/year)[6]. These results demonstrated the existence and high profitability of policy-driven information advantages, suggesting an imperfect market and the need for more regulation to maintain a more equitable trading environment. It's also critical to note that the media brought attention to issues that many Americans were unaware of, which sparked public pressure for reform. During closed-door briefings, lawmakers were seen purchasing and disposing of shares in a November 2011 CBS 60 Minutes segment. Following this, the Wall Street Journal and Washington Post demanded that lawmakers either disclose information in real time or outright forbid trading in stocks. The momentum required to pass the STOCK Act through Congress was generated by this concentrated media pressure, which was heightened by similar articles in the New York Times and Bloomberg Businessweek. As a result, Congress itself passed the STOCK Act (2012), which is a compromise. On February 2, 2012, the Senate passed it 96-3, and on February 9, 2012, the House of Representatives passed it 417-2. Since almost all Democrats and Republicans backed the bill, it was a true bipartisan motion. Even though the system is still unfair for the previously mentioned reasons, the 45-day reporting window and the $200 late fee appear to be mere measures to prevent public outrage because earlier drafts included much harsher provisions that lobbyists and some lawmakers opposed.

One thing that both Democrats and Republicans seem to agree on is that they want to maintain their ability to trade individual stocks on which they have direct influence and insider knowledge. It would be reasonable to argue that lawmakers should be allowed to invest in blind trusts, mutual funds, and broad-based exchange-traded funds (ETFs). Nonetheless, on April 4, 2012, President Barack Obama signed it. In this asymmetrical market, where the public and lawmakers obviously have different information, the penalties and the disclosure period are still too lenient.

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[5] According to a study led by Ziobrowski et al. on the abnormal returns from common stock investments of the U.S. senate in 2004 (data window: 1993-1998). pp refers to percentage points.
[6] According to a study led by Ziobrowski et al. on the abnormal returns from common stock investments of the U.S. house of representatives in 2011 (data window: 1985-2001).

2.3 Ongoing reform proposals

The 118th Congress (the final two-year term of the U.S. federal legislature, which ran from January 3, 2023, to January 3, 2025) and the current 119th Congress (2025–2027) both adopted several reform proposals that suggested stricter regulation for members of Congress after the compromise established in the STOCK Act in 2012. Reps. Abigail Spanberger (D-VA) and Chip Roy (R-TX) introduced the Real-Time Transparency Act (118th Congress) to the House of Representatives with the goal of reducing the Periodic Transaction Report deadline from 45 days to 24 hours. In addition to raising the late filing fee to $500 (automatically adjusted for inflation) and sending a repeat offender's name straight to the Ethics Committee for public display, it would necessitate an electronic, machine-readable filing portal that would enable journalists and watchdogs to instantly scrape data. Spanberger (D-VA) and Roy (R-TX) reintroduced the bill in the 119th Congress. The 118th bill was approved by the House Administration committee and scheduled for public hearing; however, all bills that were not passed expired at the end of the two-year term, which resulted in their reintroduction. Before the bill can be brought back to the floor for a vote, the House Administration Committee must complete the editing of the version introduced in the 119th Congress. Staff members are currently revising the text and negotiating amendments.

Reps. Spanberger and Roy's TRUST (Transparent Representation Upholding Service and Trust) in Congress Act (H.R. 374) and Sens. Gillibrand and Hawley's Ban Congressional Stock Trading Act (S. 357) launched a parallel campaign for blind-trust mandates in the 118th Congress. Only diversified mutual funds, broad-based exchange-traded funds, and Treasuries would remain unrestricted under either measure; infractions would result in quarterly public compliance reports and civil fines of up to $50,000. Each member, spouse, and dependent child would have ninety days to transfer individual stocks, options, and cryptocurrency into a qualified blind trust. The sponsors of both bills reintroduced nearly identical language in the 119th Congress because, despite having broad bipartisan support, neither passed committee before the term ended. While the Senate companion (S. 1879) has been referred to Homeland Security & Governmental Affairs for its initial hearing, the new House

version (H.R. 1908) already has over seventy co-sponsors, but it is still awaiting the House Administration Committee to finish its line-by-line editing and amendment process. In addition, Morning Consult polled about 2,000 registered American voters nationwide for Politico and discovered that 77% of them are in favor of either a blind-trust rule or a complete prohibition on trading for Congress. Leaders in both chambers have stated that at least one reform package will be scheduled for debate before the conclusion of the 119th Congress, and Sen. Mark Kelly has also openly supported introducing a blind-trust bill to the floor. The Real-Time Transparency Act, the twin blind-trust bills, Senator Mark Kelly's public support, and the overwhelming support of voters all suggest reforms that would finally hold lawmakers' investments to meaningful, market-integrity standards, despite the innate reluctance of many Republicans and Democrats to restrict their portfolios.

2.4 European comparison

We will now examine how European regulation differs from its American counterpart after having looked at the development and trajectory of trade policies for U.S. lawmakers. Since LUISS Guido Carli is an Italian university, we focus on Italy for this section. We will also examine France and the U.K. in greater detail to get a better perspective of the European landscape. Because European regimes place more emphasis on a politician's possessions than their trading schedule, European lawmakers are subject to less stringent timing regulations than their American counterparts, despite popular belief. Following the 2013 Cahuzac scandal, the Haute Autorité pour la Transparence de la Vie Publique (HATVP) in France requires ministers, members of parliament, and thousands of other high-ranking officials to submit two electronic forms: one on their outside income and one on their net worth. Although these filings, which are available online in machine-readable JSON, are quite comprehensive, they are only necessary for entry, exit, or mandate changes; they don't include volumes or timestamps for specific buy-and-sell orders. A similar approach is taken in Italy, where each senator and deputy is required by Law 441/1982 to submit an annual "dichiarazione patrimoniale" and "dichiarazione

redditi" covering their personal and family assets. Months after the year ends, the PDFs are posted on the parliamentary websites. Across the Channel, each Member of the British Parliament must update the online Register of Members' Financial Interests within 28 days of acquiring any holding worth more than £70 or realizing a profit above £100. The entry lists only the security name, a broad value band, and the transaction date, omitting both trade volume and exact timestamp. Late or incomplete disclosures generally draw nothing harsher than a written rebuke from the Commons Standards Committee, and ministers merely "self-certify" compliance with the non-binding Ministerial Code, leaving Britain's public far less precise insight into lawmakers' trades than even the U.S. STOCK Act provides.

The Periodic Transaction Report under the U.S. Stock Act, which lists every trade within 45 days (and could soon move to 24), is not reflected in either system. European officials can continue to time the market with far less risk of immediate public scrutiny than their American counterparts until the EU imposes a union-wide standard or until France, the U.K. or Italy combine their asset snapshots with transaction-level disclosure.

This chapter has shown that current legal frameworks, such as the U.S. STOCK Act after 2012 or the French, Italian and British asset-declaration regimes (HATVP and Law 441/1982), are still insufficient to counteract the informational advantage of policymakers. The European systems prioritize general conflict-of-interest disclosures but leave out any transaction-level timing, while the U.S. model provides dated trade logs but only imposes a $200 late fee deterrent. This gap would be reduced by the proposed American reforms (blind-trust mandates and 24-hour PTRs), but the EU has not taken any similar steps. As a result, there are still financial incentives for lawmakers on both continents to exchange privileged policy knowledge. Contrary to expectation, Europe's asset-declaration regimes give voters less timely trading data than even the flawed STOCK Act; the next chapter therefore turns to a formal model to show how small penalties, and long lags translate into profitable equilibrium trading by informed lawmakers.

3 Game-Theory Framework

3.1 Players & Timing

In this chapter we will model Congressional stock trading as a sequential two-player game whose timing mirrors the statutory disclosure process. Player 1, the insider, is a member of Congress (or an immediate family account[7]) who receives a private policy signal at time $t=0$ that raises the expected return on a targeted stock by α percentage points. The insider can execute a trade (or not) of size q dollars. Player 2, the follower, represents public trades and "Congress-tracker" exchange-traded funds (ETFs) (like NANC and KRUZ) that mimic the insider's trade, but only after they appear in a Periodic Transaction Report (PTR). Since current law allows for a filing delay of up to $\tau = 45$ *days,* the follower's decision node occurs at $t=\tau$: upon observing the PTR, the follower chooses whether to purchase a fraction k[8] (with $0 \leq k \leq 1$) of the same stock (follow) or abstain (ignore). After both orders reach the market, prices adjust mechanically, profits are realized, and (conditional on a late filing) an enforcement lottery is drawn with probability p of detection, imposing a monetary sanction M.

Looking at the timeline of moves, at stage 0 ($t=0$) the insider, P1, observes a private signal s. After having received the signal (at stage 1 where $t > 0$) P1 chooses a trade size $q \geq 0$ or waits (the trade is invisible to P2 until PTR filing). At stage 2, where $t = \tau$ (PTR delay), the PTR becomes public and P2 decides to follow (buy kq) or ignore (the trade size q and the ticker that P1 effectuated are now visible to everyone, assuming the trade value $q \geq \$1{,}000$). At stage 3, where $t = \tau + \varepsilon$ and where ε represents the price-setting lag, market price has incorporated both orders and payoffs are realized (enforcement may occur if filing was late).

[7] While trades are often split across family accounts, these typically reflect a single decisionmaker's intent. We therefore model insider volume as a unified q, rather than separate agents with strategic interaction.

[8] We consider kq the actual amount the follower orders.

We consider τ = 45 days (24 hours in the proposed legislation). We also set parameters λ, the price-impact parameter for total volume $(1+k)q$, θ, for the expected return for followers if they copy the trade, p, the probability a late filing is detected, and M, the monetary fine for late filing if detected ($200 according to the STOCK Act). The payoffs can thus be modeled as $\Pi^{P1} = q\,(\alpha - \lambda\,(1+k)q) - pM$ for P1 and $\Pi^{P2} = kq\theta$ if she[9] follows and $\Pi^{P2} = 0$ if she chooses to ignore. The parameter k is included in P1's payoff since the insider anticipates that some fraction of his trade may be copied. This copying increases the total volume that moves the price, so the insider faces a larger cost of trading. This considers the extra market impact that occurs due to copy trading.

It is important to mention that our model implements certain assumptions. Firstly, players are risk-neutral and maximize expected profit. Secondly, the private signal s is binary, with α being its expected payoff. Moreover, the price impact $\lambda(1+k)q$ is linear and deterministic. Furthermore, the enforcement cost pM depends only on filing lateness and not the trade size (as stated in the STOCK Act). Finally, followers cannot trade before τ, they only react once PTR is live.

With the sequence of moves and the core variables now defined, we can attach explicit payoff functions to the insider and the follower, and solve for the conditions under which Congressional trading, and public copy-trading, remain equilibrium behavior.

3.2 Payoffs

As we have already established, the insider's payoff is given by the function $\Pi^{P1} = q\,(\alpha - \lambda\,(1+k)q) - pM$. Where q is the size of the insider's order in dollars, α is the abnormal return per $1 generated by the signal given to P1 only, $(1+k)q$ is the linear price impact where every dollar of combined volume $(1+k)q$ nudges the execution

[9] We will refer to Player 1 (P1), the insider, as "he", and Player 2 (P2), the follower, as "she".

price unfavorably; λ is a constant slope. Finally pM is the expected enforcement cost (the probability of detection p times the fine M).

Empirical studies, that we will consider in further detail in chapter 4, place α between 5.4 and 6 percentage points, whereas pM is around \$0.30 under current law. For an insider trade size q = \$20,000 (which is considered to be a relatively small trade), comparing αq to pM gives $\alpha q \approx 0.054$ x 20,000 = 1,080, far above the \$0.30 penalty. Even at this value $\alpha q > pM$, so insider trading would remain profitable. For larger trades, such as q = \$60,000, the inequality is even more comfortably satisfied. A positive α term rewards trading with insider information; the price-impact term makes very large orders less attractive since every extra dollar traded pushes the stock price higher, meaning the insider pays an increasing price and sees the net gain shrink.

The follower's payoff is given by $\Pi^{P2}=kq\theta$ if she follows and 0 if she ignores. kq is the dollar volume the follower replicates, where $0 \leq k \leq 1$. θ is the average abnormal return per \$1 earned by copy-trading after the PTR is published. ETF data suggests θ is around 2 percentage points (we will go more into detail in section 4.3). The decision rule for the follower is that she imitates the trade when $\theta > 0$ and ignores otherwise. A \$60,000 trade with an α equal to 5.4 percentage points implies around \$3,240 of information gain, whereas pM is only \$0.30 (simply keep the profit and penalty in mind for now, we will develop this further in chapter 4).

Given these payoff functions, we now derive each player's best response condition and identify the strategy combinations that form a perfect information equilibrium.

Looking at the linear price impact and calibration of term λ[10], we assume a linear permanent price impact with slope λ (units 1/\$) on the total order flow $(1+k)q$. As we have already established, q is the insider's dollar trade and k is the public (or ETF) copy weight. The linear impact reduces returns by $impact(return) = \lambda(1+k)$. Considering Player 1's payoff function $\Pi^{P1}(q) = q(\alpha - \lambda(1+k)q) - pM$ we can also write it as $\Pi^{P1}(q) = q\alpha - \lambda(1+k)q^2 - pM$. This gives us the impact in dollars: $impact(dollars) = \lambda(1+k)q^2$.

[10] λ is the constant slope of linear price impact (units 1/\$). It maps each extra dollar of the combined flow $(1+k)q$ into a return drag, hence the dollar cost term $\lambda(1+k)q^2$.

3.3 Equilibrium conditions

Let's find the best response for P1's function $\Pi^{P1}(q) = q(\alpha - \lambda(1+k)q) - pM$.

The insider must decide whether to trade or wait, looking at the very first trade where q tends to 0^+ ($q \to 0^+$), we imagine an incredibly small initial value that the insider considers investing. To calibrate λ from observed behavior we consider the following partial derivative:

$$\left.\frac{\partial \Pi_I}{\partial q}\right|_{q=0} = \alpha - pM$$

If $\alpha q - pM > 0$, the first infinitesimal trade is profitable, so the insider is willing to trade. If $\alpha q - pM \leq 0$, even the first dollar loses money, so the insider waits. This gives the threshold inequality:

$$\text{If } \alpha q > pM \Rightarrow \text{Trade}$$

Now given that trading is indeed worthwhile we will find the optimal order size in dollars. We still consider P1's original function $\Pi^{P1}(q) = q(\alpha - \lambda(1+k)q) - pM$.

Expanding the brackets we get $\Pi^{P1}(q) = \alpha q - \lambda(1+k)q^2 - pM$, with αq being the linear gain and $\lambda(1+k)q^2$ being the quadratic cost.

We take the partial derivative in q:

$$\frac{\partial \Pi_I}{\partial q} = \frac{\partial}{\partial q}(\alpha q) - \frac{\partial}{\partial q}(\lambda(1+k)q^2) - \frac{\partial}{\partial q}(pM)$$

The derivative of αq is simply α. The derivative of $\lambda(1+k)q^2$ is $2\lambda(1+k)q$. The last term pM does not contain the variable q so its derivative is 0.

Hence:

$$\frac{\partial \Pi_I}{\partial q} = \alpha - 2\lambda(1+k)q$$

Looking at the linear price impact and calibration of term λ[11], we assume a linear permanent price impact with slope λ (units 1/\$) on the total order flow $(1+k)q$. As we

[11] λ is the constant slope of linear price impact (units 1/\$). It maps each extra dollar of the combined flow $(1+k)q$ into a return drag, hence the dollar cost term $\lambda(1+k)q^2$.

have already established, q is the insider's dollar trade and k is the public (or ETF) copy weight. The linear impact reduces returns by *impact* (*return*) = λ (1+k). Considering Player 1's payoff function $\Pi^{P1}(q) = q(\alpha - \lambda(1+k)q) - pM$ we can also write it as $\Pi^{P1}(q) = q\alpha - \lambda(1+k)q^2 - pM$. This gives us the impact in dollars:

$$impact\ (dollars) = \lambda(1+k)q^2$$

To calibrate λ from observed behavior we consider the partial derivative of P1's payoff in q seen above and set it equal to 0.

$$\frac{\partial \Pi_I}{\partial q} = \alpha - 2\lambda(1+k)q = 0$$

This gives us $\lambda = \frac{\alpha}{2(1+k)q}$. This identifies the linear-impact slope that rationalizes an observed trade size q at given α and k values.

When we look for the best trade size q in dollars, we ask "If I bump my order up or down by one extra dollar, does my total profit go up or down?". We measure that bump with the derivative. The first order condition is therefore the rational rule we abide by: we stop increasing q when one more dollar adds zero extra profit (when the slope of the function at the point q^* is equal to zero).

We therefore set our partial derivative in q equal to zero (*marginal change = 0*) as that is where profit is maximized.

We have:

$$\alpha - 2\lambda(1+k)q^* = 0$$

Solving for q^*, we get:

$$q^* = \frac{\alpha}{2\lambda(1+k)}$$

Later sections will evaluate this condition using representative trade sizes rather than solving for the exact optimum[12], it was however interesting to mention that there exists an optimal order size q^* that can theoretically be found.

We must keep in mind that the insider trades only if $\alpha > \lambda(1+k)q_1 + \frac{pM}{q1}$. In the benchmark case (Table 2) with negligible price impact ($\lambda \approx 0$), this reduces to $\alpha q_1 > pM$. We substitute this threshold into the order-size solution obtained for q^*. The insider is therefore left with a single policy rule represented by:

$$q^* = \frac{\alpha - pM}{2\lambda(1+k)}$$

The numerator is effectively zero whenever $q\alpha \leq pM$ since the insider is rational and would not trade. The larger the information edge α or the smaller the expected penalty pM, the larger the trade. A higher price-impact slope λ or a bigger follower fraction k makes the insider scale trade down.

As a reminder, the legislator only trades when the private information premium outweighs the expected penalty and, once the decision on whether to trade is made, sets the order value q so that it rises in proportion with the residual informational advantage ($\alpha - pM$) and in inverse to both the price impact slope λ and the anticipated copy trade fraction k. With this expression we embed both the participation decision and the optimal sizing. We will use this formula for the remainder of the chapter.

Let's now find the best-response rule for the follower. The follower payoff is given by $\Pi^{P2} = kq\theta$ if she follows and 0 if she ignores. The decision criterion is given by $\theta > 0$, where θ is the average abnormal return per \$1 earned by copy-trading after the

[12] In the theoretical model, the insider's optimal trade size is $q^* = \frac{\alpha}{2\lambda(1+k)}$, which follows directly from the first-order condition. However, in the empirical applications that follow (in chapter 4), we do not solve for q^*explicitly. Instead, we evaluate whether the condition $\alpha q \leq pM$ is satisfied at fixed dollar trade sizes. In chapter 4 we consider order sizes \$20 000, \$60 000 and \$100 000. This reflects two considerations. First, insider trades are typically constrained by portfolio choices and liquidity, rather than chosen optimally in a continuous model. Second, under the U.S. STOCK Act, Congressional trades are reported in disclosure ranges (e.g. \$15k-\$50k, \$50k-\$100k, etc.), so the exact value of q is unobserved. Using representative values within those ranges provides a tractable and realistic way to benchmark Player 1's profitability against enforcement penalties.

PTR is published. The follower copies if θ is positive and ignores otherwise. θ essentially represents the residual drift the market has not yet priced after τ days.

In what follows, we will distinguish between two versions of the insider trading equilibrium, depending on whether price impact is assumed to be present. In the general model, trading imposes a cost due to market impact, and the insider's decision rule reflects this: the expected return α must exceed both the endogenous price impact cost and the fixed enforcement penalty. Specifically, the insider trades if $\alpha > \lambda(1+k)q_I + \frac{pM}{q1}$. As we know, λ represents the price impact parameter, k is the share of the trade copied by P2, q_I is the insider's trade size, and pM is the expected penalty. However, in most real-world disclosure settings (such as regulated equity markets with high liquidity, such as the stock market), price impact is minimal and often negligible. For this reason, and following standard practice in policy analysis, we assume $\lambda \approx 0$ in specific benchmark cases. This gives us a simplified cojndition under which the insider trades if $\alpha q_I > pM$. In both the general and benchmark cases, P2 copies the insider's trade only if a trade is disclosed and the post-disclosure residual drift $\theta > 0$. The equilibrium strategies are shown in Table 1 (general model) and Table 2 (benchmark case).

Parameters	P1 move	P2 move[13]	Equilibrium
$\alpha > \lambda(1+k)q_I + \frac{pM}{q1}$ and $\theta > 0$	Trade	Copy	Trade / Copy (baseline today[14])
$\alpha > \lambda(1+k)q_I + \frac{pM}{q1}$ and $\theta \leq 0$	Trade	Ignore	Trade / Ignore
$\alpha \leq > \lambda(1+k)q_I + \frac{pM}{q1}$	Wait	Ignore	Wait / Ignore

Table 1

[13] Player 2's payoff is proportional to $kq_I\theta$, but since both k and q_I are strictly positive only when Player 1 trades, the copy decision only arises in that case. If q_I=0, no trade is disclosed, and P2 does nothing by default. Thus, the follower's strategy condition simplifies to $\theta \leq 0$, but is only evaluated when q_I>0.

[14] As we will see in the next chapter, current data indicates that $5.4\ pp \leq \alpha \leq 6\ pp$, with a p value of around 0.15%. The fine, M, if detected is equal to $200. θ is around 2 pp per year.

Parameters	P1 move	P2 move	Equilibrium
$\alpha q_1 > pM$ and $\theta > 0$	Trade	Copy	Trade / Copy (baseline today)
$\alpha q_1 > pM$ and $\theta \leq 0$	Trade	Ignore	Trade / Ignore
$\alpha q_1 \leq pM$	Wait	Ignore	Wait / Ignore

Table 2

Since the insider moves first, his inequality defines whether a trade is observed, the follower's inequality then indicates whether that trade is imitated.

We now examine how specific policy changes, such as increasing p or M or cutting the filing lag τ (which in turn lowers θ), could move the game equilibrium out of the Trade / Copy region into the Trade / Ignore or Wait / Ignore region, thereby shrinking the extra profits insiders currently capture from their informational edge.

3.4 Comparative statics

Before moving on to data, we briefly ask ourselves how the model's three policy relevant parameters (the audit probability p, the statutory fine M, and the disclosure lag τ), which govern the followers residual return θ, reshape the equilibrium derived above. As we know the insider trades if $\alpha > \lambda(1+k)q_1 + \frac{pM}{q1}$. In the simplified benchmark ($\lambda \approx 0$), this reduces to $\alpha q_1 > pM$. The follower copies if $\theta > 0$, provided a trade is disclosed.

Looking at the audit probability p, the inequality touched on is obviously $q\alpha > pM$.

The derivative in p is given by $\frac{\partial(pM)}{\partial p} = M$. Since a fine M cannot be negative, we know that $M > 0$, therefore $\frac{\partial(pM)}{\partial p}$ is strictly positive. This also implies, also through simple logic, that every extra percentage point of audit probability p raises the insider's expected cost by exactly M dollars. The participation inequality (decision threshold) is $q\alpha > pM$, graphically the term pM shifts upward as p rises, making the inequality harder to satisfy. As a result, a higher audit probability decreases the set of situations in which the insider chooses to trade (some trades that were profitable when p was low become unprofitable once the detection risk is higher).

Let's look at an example considering the *M* value of $200 established in the STOCK Act by simply changing the audit probability *p.*

Audit probability *p*	Expected penalty *pM*
0.1%	$0.20
1%	$2
10%	$20
100%	$200

Table 3

Despite the penalty *M* being still relatively low, increasing *p* can influence the worthiness of some trades. Furthermore, there is a spillover effect on the optimal trading quantity. As we have already established the profit maximizing dollar order is given by $q^* = \frac{\alpha - pM}{2\lambda(1+k)}$. Let's see how q^* reacts to *p*. The numerator $\alpha - pM$ is decreasing in *p* since *M* is strictly positive. The denominator is unaffected by *p*.

Hence the partial derivative of q^* in *p* is given by the following steps.

We show the scale factor as (the net information edge) times $\alpha - pM$:

$$q^* = \frac{1}{2\lambda(1+k)}(\alpha - pM)$$

$$\frac{\partial(q*)}{\partial p} = \frac{1}{2\lambda(1+k)} \frac{\partial}{\partial p}(\alpha - pM)$$

$\frac{\partial}{\partial p}(\alpha - pM) = 0 - M = -M$ since α does not depend on *p* and $\frac{\partial}{\partial p}(pM) = M$.

Multiplying the scale factor, we get:

$$\frac{\partial(q*)}{\partial p} = - \frac{M}{2\lambda(1+k)}$$

Raising the audit probability *p* lowers the optimal order size q^* at a constant rate $\frac{M}{2\lambda(1+k)}$. The negative sign confirm that stricter enforcement (a higher *p* value) discourages large trades.

Turning to the statutory late-filing fine *M*, the relevant threshold is likewise the insider's conditions on whether to trade $q\alpha > pM$.

The derivative is given by:

$$\frac{\partial(pM)}{\partial M} = p > 0$$

Every extra dollar of statutory penalty lifts the break-even point one for one (scaled by the audit probability p). With $p = 0.0015$ the break-even line rises \$1.50 for each \$1,000 added to M. Similarly to p, there is a spillover effect on the trade size. The derivative is given by:

$$\frac{\partial(q*)}{\partial M} = -\frac{p}{2\lambda(1+k)} < 0$$

By the derivative we can literally see that a stronger fine not only deters the marginal trade (by lowering the profitability threshold), but it also makes every inframarginal trade that still passes the threshold smaller. A larger M shrinks the residual edge ($\alpha - pM$) by the scale factor and shrinks the derivative.

With baseline parameters ($\lambda = 2\ x\ 10^{-6}$, $k = 0.3$) a \$10,000 fine (instead of \$200) cuts the average \$60,000 order to well below \$10,000 (we will understand where these values come from further in the following chapter, for now just take into account that they are the average values taken from PTR data).

Under today's numbers where $p \approx 0.15\%$ and M = \$200, the expected fine is only about \$0.30 per trade, insignificant compared to a 5.4pp insider edge on average. Increasing M even to \$10,000 would raise the expected cost to \$15, wiping out some of the insider's profit unless the signal is stronger (especially if we also consider a stronger audit probability p along with a larger fine), and downsizing any trade that still occurs. Much like a higher audit probability p it moves the game from a Trade / Copy equilibrium toward a Trade / Ignore and even (if the p and M values become high enough) a Wait / Ignore equilibrium.

Let us now look at the disclosure lag τ. Today the disclosure lag can be as long as 45 days as we have already discussed. The residual drift $\theta(\tau)$ measures the average extra percentage point return that is still unpriced after τ days. This is the entire profit source for copy traders, if $\theta(\tau) = 0$ the copy strategy earns nothing. The follower's decision rule is thus $\theta > 0$, provided a trade is disclosed.

The functional link of how τ maps into θ is shown by studies (which we will look into further in chapter 4) which suggest that half of the abnormal return usually

decays within 2-4 trading days, we can embed that fact with the exponential formula, $\theta(\tau) = \theta_0 e^{-\lambda\, decay\, \tau}$, where $\lambda\, decay\, \tau = \frac{ln\, 2}{half-life}$.

Taking the derivative in τ gives us $\frac{\partial \theta}{\partial \tau} = -\lambda\, decay\, \theta(\tau) < 0$.

Let's look at some plausible magnitudes of τ.

The current 45-day stock rule with a 0.23 value for λ gives us $e^{-0.23x45}=3x10^{-5}$, almost no drift remains as the value is close to zero, imitation is not very remunerative. If we consider a one day filing window we have $e^{-0.23x1}=0.79$, a follower still captures about 80% of the insider's initial abnormal return rendering copying the trades very interesting.

Looking at how τ influences the optimal order size with the spillover effect we now know that $q^* = \frac{1}{2\lambda(1+k(\tau))}(\alpha - pM)$.

Tracking ETFs choose their replication weight *k* to match the profitability of copying and ETFs like NANC or KRUZ use a weight of around 0.3 today. When τ is cut and $\theta(\tau)$ tends to 0, the ETF will eventually set *k* to 0 which lowers the price impact term $2\lambda(1 + k(\tau))$ and reduces the insider's fill price penalty ($\Pi^{P1} = q\,(\alpha - \lambda\,(1+k)q) - pM$). Lowering τ directly lowers the follower's gain and indirectly lowers the trade size of the insider.

Overall, we see that moving the PTR deadline from 45 days down to one significantly weakens the benefits of insider trading. Copy-traders gain more access to useful information, since the insider's signal (the drift $\theta(\tau)$) will be more present with a shorter window. Insiders anticipate being copied more closely as a shorter window increases the ETF weight *k*. This amplifies the market impact of their orders and increases the trading costs under the q^* rule. The insider may find it less appealing to trade if the information is quickly absorbed and the costs are higher. We could then see that the equilibrium may move from a Trade / Copy scenario to Trade / Ignore, or even to a Wait / Ignore equilibrium if the α is not too strong.

These comparative-static insights are purely mathematical; in chapter 4 we will plug in real data to show the exact dollar and percentage point changes.

4 Empirical Evidence

4.1 Corporate insiders as a benchmark

Before we quantify how much U.S. lawmakers earn from trading with policy knowledge, we need a benchmark that financial economists already trust. Academic work on corporate insider transactions offers exactly that: decades-worth of well-documented studies that clearly define access to non-public information, precisely track disclosure delays, and apply abnormal-return methods consistently. Using upper management[15] and large shareholders[16] returns as our baseline lets us show, first, that the Congressional α sits within a familiar range, and second, that insiders can still profit even when the corporate rulebook is much stricter than the one that applies to Congress. There are several laws in the U.S. that apply to insider trading in corporations. There is a general prohibition under SEC Rule 10b-5 which bans any corporate insider from trading on material, non-public information. If caught, it can be considered civil and possibly criminal offense. Rapid disclosure is required under section 16(a) of the Exchange Act. It forces directors, officers and large shareholders (more than 10% ownership) to file a form[17] within two business days of every trade, giving the market almost real time visibility. Under section 16(b) there is a strict-liability rule that forces insiders to return to the company any short-swing[18] profits made from buying and selling the same stock within six months. Most listed firms also impose internal trading bans (around 60-day windows) that run from late in the quarter until a day or two after earnings are released, further limiting legal trading opportunities for executives. Breaches of these laws can trigger SEC civil fines, disgorgement orders, officer or director bars, and even criminal charges carrying up to twenty years in prison.

[15] Here upper management is referred by Lakonishok and Lee as CEOs, CFOs, chairmen of the board, directors, officers, presidents, and vice-presidents.
[16] Here large shareholders are referred by Lakonishok and Lee as those who own more than 10% of shares and are not in management.
[17] This is the standard American Form 4.
[18] Insider round-trip trades within six months.

We will reference the data found in Josef Lakonishok and Inmoo Lee's 2001 paper titled "Are Insider Trades Informative?", where they examined insider trading activities of all companies traded on the NYSE, AMEX, and Nasdaq during the 1975-1995 period, splitting observations by firm size and insider role.

The study measures returns over a five trading-day window (-2 to +2 around each purchase date), this window captures the price impact of non-public information. Lakonishok and Lee calculated the abnormal return by taking each daily stock return which is then market adjusted by subtracting the equal weighted NYSE, AMEX, or Nasdaq index. The authors then sum the adjusted returns over five consecutive trading days. They separate it between the Trading Period abnormal return, sum of 5 days around the trade date (this is the insider's private information gain and serves as our five day α), and the Reporting Period abnormal return, sum of 5 days around the Form 4 filing date (any positive value here represents the residual drift θ that copy traders can still capture). The short run α (α for five days around trade date with two days before and two days after) is given by α_{5d}. For upper management purchases in small-cap firms the trading period abnormal return is +0.93% (from table 3, page 86 with a standard error of 0.36 and t=2.6). To compare this α value we annualize the figure. $\alpha_{US} = (1 + 0.0093)^{252/5} - 1 \approx 61.5\%$ per year[19]. This is the insider's immediate private information gain, α, used in the previous chapter.

Looking at the follower's margin, θ, in the reporting period, the abnormal return is +0.24%, a small but still positive value. We adopt this +0.24% as the baseline value for θ for the corporate setting. The portfolio spread return of 7.8 percentage points, given on page 82, ranks firms by net insider activity over the previous six months and finds that companies with extensive insider purchases outperform those with extensive insider sales by 7.8 percentage points (pp) over the next 12 months. After adjusting for size and book-to-market, the spread narrows to 4.8 pp. Because this 4.8 pp figure is a purchase minus sale spread, we treat it as an upper bound signal of long run persistence rather than a direct input to Π^{Pl}, it nevertheless supports the premise that insider information continues to matter well beyond a five-day window. Now let's

[19] The 252 value comes from the average number of trading days per year which ranges between 250 and 252.

look at a profit illustration for Player 1 in a corporate setting using the formula we introduced in chapter 3, Player 1's profit is given by $\Pi^{P1} = q\,(\alpha - \lambda\,(1+k)q) - pM$. For the corporate benchmark a typical trade is small (around \$50,000[20]), so microstructure estimates put $\lambda\,(1+k)q$ below 0.02%[21]. We therefore neglect that term for this specific plug-in, using $\lambda \approx 0$. We also assume that there are no followers (k=0), so P1's profit simplifies to $\Pi^{P1} = q\alpha - pM$ as opposed to $\Pi^{P1} = q\,(\alpha - \lambda\,(1+k)q) - pM$. We consider Π^{P1} = 50,000 x 0.615 – 1 x 100,000 = -\$69,250[22].

Since $q_1\alpha < pM$ as 0.615 x 50,000< 100,000, a 60% yearly edge (α) cannot outweigh the expected \$100,000 penalty on a typical Form 4 trade. This would also be true if we consider the 0.93% five-day α, since Π^{P1} = 50,000 x 0.0093 – 1 x 100,000 = -\$99,535 <0.

The insider does not trade and since no filing appears θ is 0 so the Nash equilibrium is Wait / Ignore. A five- day α of 1% and a residual θ of 0.24% provide conservative floors for the Congressional figures that follow. If lawmakers earn materially higher numbers under looser rules, the policy concern intensifies.

We will now look at a paper written by David Hillier and Andrew Marshall in 2002 titled "Are trading bans effective? Exchange regulation and corporate insider transactions around earnings announcements".

The U.K. laws on corporate insiders differs from the American ones, let's briefly see how. Article 19 of the retained U.K. Market Abuse Regulation (MAR) requires directors, senior managers, and other PDMRs (Person Discharging Managerial Responsibilities as defined in the MAR) to notify both the issuer and the Financial Conduct Authority of any share or option trade within three business days, and the issuer must publish the notice in the same timeframe. The Financial Conduct

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[20] The mean open-market purchase value being \$49,700 in the paper.

[21] Micro-structure work on NYSE and Nasdaq equities typically finds permanent price impact of roughly 5–10 basis points (bp) per \$1 million traded (see Almgren & Chriss 2005; Breckenfelder 2019). Taking the mid-point, 7 bp, and scaling it to a \$50,000 block yields 7 bp × (50,000 / 1,000,000) ≈ 0.35 bp = 0.0035 %. If copy-traders replicate the order one-for-one ($k \approx 1$), the multiplier $(1+k)$ doubles that to about 0.007 %. Rounding up to 0.01 % still errs on the side of overstating impact, so treating $\lambda(1+k)q$ as negligible ($\lambda \approx 0$) in the corporate plug-in remains conservative.

[22] A \$100,000 fine is near the lower quartile of recent individual settlements, so we use this conservative value. SEC v. Bianchi (2022) settled at \$148,000 for \$49,000 in gains to only cite one of many examples.

Authority can impose unlimited civil fines and order disgorgement. According to the Criminal Justice Act of 1993, a violator can carry penalties of up to ten years in prison and unlimited fines. There are also some internal rules, for example, most listed companies operate 30-day close periods before interim or annual results during which PDMRs are not allowed to trade unless an exemption applies. This makes it hard to exploit non-public information for insiders. The London Stock Exchange Model Code also bans director trading during the two-month close period before earning releases but still requires a Regulatory News Service (RNS) prompt disclosure[23] (typically within one or two days, we will consider the two-day value to be cautious)[24]. In this study all FTSE-listed director trades (1984-1998) with abnormal returns summed over the window of two months prior and after around the earning dates. Looking at Table 6 on page 407, column $\text{CAR}_{t+1:t+120}$ and row "Full sample – Active good news (purchase)" (meaning purchases made when the next earnings announcement later proves positive), shows +21.69% for trades executed immediately after the two-month close period. This cumulative abnormal return indicates that directors still capture a sizeable four-month profit even though they had to wait out the blackout and file a RNS disclosure within two days. We set the four-month cumulative abnormal return as $\alpha_{+1:120} = 0.2169 \approx 0.217$. Annualizing this α value considering it is done over 120 days, we have α_{UK}= (1+0.217)$^{252/120}$-1 ≈ 52.6% per year.

The paper does not specify any residual drift θ in this case so we consider it to be 0. We continue with the following inputs for our P1 return function. Since there is no official average purchase value published, we assume the value of £50,000 to err on the side of caution, which would equal around $72,000. We consider $p \approx 1$, and the fine M= £100,000[25], which would have been $144,000 in 2001. We have $\Pi^{P1} = q\alpha - pM$ = 72,000 x 0.526 -1 x 144,000 = -$106,128. Considering the original 120-day value, we have $\Pi^{P1} = q\alpha - pM$ = 72,000 x 0.217 -1 x 144,000 = -$128 376. The equilibrium is Wait in this case too (since there is no follower and P1 does not trade). Even with a 52.6% yearly abnormal return and a 22% four-month abnormal return, the expected

[23] RNS disclosure is the London Stock Exchange's mandatory notice that a director or other PDMR files to disclose the price, volume, and date of any personal share transaction.
[24] Today, the Market Abuse Regulation (MAR) sets three business days.
[25] In the U.K., FCA civil penalties in recent market abuse settlements with individuals cluster between £100 000 and £600 000, we once again use a conservative figure to err on the side of caution.

£100,000 penalty more than wipes out the gain at this trade size, so the insider's optimal choice is not to trade but rather wait.

Scenario	τ[26] days to public filing	Detection probability p	Penalty M ($)	Trade size q ($)	Abnormal return α (horizon)	θ[27] (drift)	P1 payoff Π^{P1}($)[28]
Raw U.S. corporate (L. & L.)	2 days (Form 4)	≈1	100,000	50,000	0.93% (t -2…+2, 5-day)	0.24%[29]	-99,535 ($\lambda \approx 0$, $k=0$)
Annualized U.S. corporate (L. & L.)	2 days (Form 4)	≈1	100,000	50,000	61.5% (per year)	0.24%	-69,250 ($\lambda \approx 0$, $k=0$)
Raw U.K. corporate (H. & M.)	0 days post-blackout (RNS disclosure two-day notice)	≈1	144,000	72,000	21.7% (120-day)	0%	-128,376 ($\lambda \approx 0$, $k=0$)
Annualized U.K. corporate (H. & M.)	0 days post-blackout (RNS disclosure two-day notice)	≈1	144,000	72,000	52.6% (per year)	0%	-106,128 ($\lambda \approx 0$, $k=0$)

Table 4

[26] The disclosure delay τ has no effect on the insider's profit. However, shorter delays reduce the residual drift θ, and thus matter for potential follower profits.

[27] θ measures the residual drift in prices following disclosure. In the corporate benchmark, no followers trade, so θ does not enter the insider's payoff function. It is shown here only as a benchmark for comparison with Congressional cases where followers can act.

[28] We consider the payoff to be the Insider's information edge compared to a counterfactual of not trading at all. It reflects the net value of exploiting private information after accounting for penalties and is negative whenever expected fines outweigh the abnormal return.

[29] A positive θ indicates that prices continue to drift in the direction of the insider's trade even after disclosure. In follower terms, this would represent a profitable copy-trade opportunity. In the corporate benchmark, however, enforcement prevents such trades from being viable for the insider, so θ is reported only as a reference point. It is still meaningful for θ to be positive in this setting: for example, an insider might act on information that will later be confirmed by a company announcement. Once the announcement occurs, prices keep moving upward, so a follower observing the disclosure could still capture a positive drift, even though this opportunity does not come from direct imitation of the insider's order flow.

Table 4 illustrates that while corporate insiders may appear to earn sizeable abnormal returns over the short or medium runs (0.93% in the U.S. over five days and 21.7% in the U.K. over four months), these translate into annualized information edges of around 50-60% per year. Despite this magnitude, the expected six-figure penalties in both legal regimes more than offset the informational gains. As a result, P1's payoff is negative in both the U.S. and U.K. cases, making "Wait / Ignore" the Nash equilibrium outcome. Looking at both raw horizons and annualized equivalents highlights two things. First, insiders do appear to have access to highly valuable information, with returns that would usually imply strong profitability if left unchecked (with a detection probability $p \approx 0$). Second, strict enforcement and mandatory disclosure neutralize this advantage, ensuring that even large information edges cannot be profitably exploited. Thus, the corporate setting established a conservative benchmark: insider trading opportunities exist in theory, but in practice penalties dominate. This provides a sharp contrast to the Congressional case that follows, where enforcement is weaker and residual drift creates scope for both insider and follower profits.

4.2 Political Insiders

After having looked at the corporate landscape we will now see exactly how and how much U.S. lawmakers earn from trading with policy knowledge. Remember that Player 1, the insider, trades if $q\alpha > pM$ and the public copies if $\theta > 0$. In order to determine and explain the α value we have previously found we will refer to Ziobrowski, Boyd, Cheng & Ziobrowski (2011, Abnormal Returns From the Common Stock Investments of Members of the U.S. House of Representatives)**,** Ziobrowski, Cheng, Boyd & Ziobrowski (2004, Abnormal Returns from the Common Stock Investments of the U.S. Senate), and the Unusual Whales "2024 Official Congressional Trading Report".

In Ziobrowski, Boyd, Cheng & Ziobrowski 2011 article on the House of Representatives we quote from the abstract that "a portfolio that mimics the purchases of House Members beats the market by 55 basis points per month (approximately 6%

annually)". In Ziobrowski, Boyd, Cheng & Ziobrowski 2004 article on the U.S. Senate we find that "a portfolio that mimics the purchases of U.S. Senators beats the market by 85 basis points per month". To annualize the monthly data, we multiply the result by 12: (0.85%)12 = 10.2%. We compound the result for more accuracy: $(1+0.0085)^{12}$ -1= 10.7%. This data found in the abstracts is a summary of the researchers' findings, they are not assumptions and can be trusted to set our own α value. We take a 6 pp value to be conservative. We also perform a cross-check with the 2024 data found on Unusual Whales. The Unusual Whales 2024 report shows that the abnormal return for all members of Congress is 28.6% whereas it is 23.2% for the S&P 500, we therefore find our α baseline to be 28.6% - 23.2% = 5.4 pp. To be as conservative as possible and considering it is the most recent data, we will generally consider our α to be 5.4 pp, although it can range up to 10.7 pp (for the Senate).

Considering a party split, it is interesting to see the difference between republican and democratic unusual returns, we look at these various scenarios with different α values in Tables 4, 5 and 6 below. Unusual Whales 2024 data shows that Democrats have a 31% return and Republicans have a 26% return. Comparing it to the S&P 500 return of 23.2%, we have $\alpha_{Dem,2024} \approx$ 31%-23.2% ≈ 7.8 pp and $\alpha_{Rep,2024} \approx$ 26%-23.2% ≈ 2.8 pp.

We have already established that the audit probability and fine pM is equal to \$200 x 0.15% = \$0.30. The median trade size of an insider according to QuiverQuant PTR exports is around \$60,000. Looking back at Player 1's payoff seen in section 3.2, we have $\Pi^{P1} = q\,(\alpha - \lambda\,(1+k)q) - pM$. Remember that λ is the constant slope of linear price impact (units 1/\$). It maps each extra dollar of the combined flow $(1+k)q$ into a return drag, hence the dollar cost term $\lambda\,(1+k)q^2$. Furthermore, remember that we have also established that $\lambda = \frac{\alpha}{2(1+k)q}$ in chapter 3. Let's not forget that tracking ETFs choose their replication weight k to match the profitability of copying and ETFs like NANC or KRUZ use a weight of around 0.3 today. Let's look at a few different scenarios for P1's payoffs considering various α values, and various trade sizes q. The different q values will be \$20,000, \$60,000, \$100,000 since under the STOCK Act, transactions are reported in ranges (e.g., \$1,001-\$15,000; \$15,001-\$50,000; \$50,001-

$100,000). We consider $60,000 as the median while $20,000 is in a lower range and $100,000 is a reasonable value for a trade to be considered "large".

In Table 5 we consider q = $60,000. The denominator $2(1+k)q$ in this case would be equal to 2 (1+0.3) 60,000 = $156,000.

Case	q ($)	k	pM ($)	α	$2(1+k)q$	$\lambda = \frac{\alpha}{2(1+k)q}$	Final payoff $\Pi^{PI} = q(\alpha - \lambda(1+k)q) - pM$
House	60,000	0.3	0.30	0.06	156,000	3.846 (10^{-7})	$1,799.70
Senate	60,000	0.3	0.30	0.107	156,000	6.859 (10^{-7})	$3,209.70
Aggregate 2024 (Congress)	60,000	0.3	0.30	0.054	156,000	3.462 (10^{-7})	$1,619.70
Democrats	60,000	0.3	0.30	0.078	156,000	5 (10^{-7})	$2,339.70
Republicans	60,000	0.3	0.30	0.028	156,000	1.795 (10^{-7})	$839.70

Table 5

In Table 6 we consider q = $20,000. The denominator $2(1+k)q$ in this case would be equal to 2 (1+0.3) 20,000 = $52,000.

Case	q ($)	k	pM ($)	α	$2(1+k)q$	$\lambda = \frac{\alpha}{2(1+k)q}$	Final payoff $\Pi^{PI} = q(\alpha - \lambda(1+k)q) - pM$
House	20,000	0.3	0.30	0.06	52,000	1.154 (10^{-6})	$599.70
Senate	20,000	0.3	0.30	0.107	52,000	2.058 (10^{-6})	$1,069.70
Aggregate 2024 (Congress)	20,000	0.3	0.30	0.054	52,000	1.038 (10^{-6})	$539.70
Democrats	20,000	0.3	0.30	0.078	52,000	1.5 (10^{-6})	$779.70
Republicans	20,000	0.3	0.30	0.028	52,000	5.385 (10^{-7})	$279.70

Table 6

In Table 7 we consider q = $100,000. The denominator $2(1+k)q$ in this case would be equal to 2 (1+0.3) 100,000 = $260,000.

Case	q ($)	k	pM ($)	α	$2(1+k)q$	$\lambda = \frac{\alpha}{2(1+k)q}$	Final payoff $\Pi^{P1} = q(\alpha - \lambda(1+k)q) - pM$
House	100,000	0.3	0.30	0.06	260,000	2.308 (10^{-7})	$2,999.70
Senate	100,000	0.3	0.30	0.107	260,000	4.115 (10^{-7})	$5,349.70
Aggregate 2024 (Congress)	100,000	0.3	0.30	0.054	260,000	2.077 (10^{-7})	$2 699.70
Democrats	100,000	0.3	0.30	0.078	260,000	3 (10^{-7})	$3,899.70
Republicans	100,000	0.3	0.30	0.028	260,000	1.077 (10^{-7})	$1,399.70

Table 7

Looking at these tables calculating P1's payoff, a striking pattern emerges regardless of whether trades are small ($20k), median-sized ($60k), or large ($100k), every single scenario yields a positive payoff for lawmakers. The λ term, which measures the marginal price impact, remains vanishingly small (10^{-6} to 10^{-7}), so much so that we could write Player 1's payoff function as $\Pi^{P1} = \frac{\alpha q}{2} - pM$. The expected enforcement cost pM of $0.30 is also completely insignificant as we had claimed prior. This makes the trade condition $\alpha q > pM$ trivially satisfied in all cases, confirming the theoretical prediction that the best strategy for Player 1 is always to trade under real world conditions. What is more interesting (and less trivial) is how the payoff scales and various across groups. Senators consistently outperform House Representatives, echoing the empirical evidence that they enjoy stronger informational advantages, while Democrats trades yield substantially higher profits than Republicans (reflecting their abnormal return spread in the Unusual Whales dataset). The scaling of profits with q is also telling. A $20k trade still produces several hundred dollars in gains (enough to justify frequent, low-profile trading), while $100k trades amplify the gains into several thousand dollars with no meaningful increase in penalty risk. Taken together, the tables show that Congressional trading persists across all transaction sizes, there is no reason to refrain from trading for lawmakers.

We will now look at the follower's best response using empirical data. P2 only acts if P1 has traded. Her payoff depends on the residual drift in prices after disclosure, θ. As we have already established, her payoff is given by $\Pi^{P2} = kq\theta$. As we know q is

the trade size, and k is the fraction copied by P2. In practice, followers do not mimic Congressional trades dollar-for-dollar, that's why k exists. Tracking ETFs such as NANC or KRUZ use a scaling weight of about k=0.3. Unlike P1, whose decision depends on the trade-off between expected return and enforcement risk, P2's decision is purely driven by the sign of θ. If $\theta > 0$, the follower earns a positive expected return by copying the insider's trade. If $\theta = 0$, copying yields no gain, the strategy is irrelevant since disclosure contains no exploitable drift. If $\theta < 0$ copying produces losses, so P2 ignores. It is obvious but worth noting that only trades that meet the insider's threshold and are acted upon are visible by the follower, as we have seen in section 3.3 trades that don't meet the threshold are acted upon by neither player. In the corporate benchmark seen in section 4.1, we saw that insiders optimally did not trade, leaving no signal (q=0) thus making θ irrelevant[30]. Even if a drift were measured in the literature, followers had no opportunity to exploit it. In the Congressional setting, however, where enforcement is weaker and disclosure delays are rather long, empirical studies show that positive residual drifts persist ($\theta > 0$). This ensures followers systematically benefit from copying.

To make this concrete we plug in the same values of q as we used for P1 with q values of \$20k, \$60k and \$100k and set k=0.3. With a baseline value of $\theta = 0.24\%$[31], P2's payoffs are small in dollar terms but systematically positive. We present the follower's payoff across trade sizes directly, rather than splitting by House, Senate, or party affiliation as we did for P1. The reason for that is that for followers, the only factor affecting the payoff is the size of the insider's trade q. Since the replication weight k and the drift θ are the same across all Congressional subgroups, the follower's decision rule and outcome are identical regardless of whether the trade originates in the House, Senate, Democrats, or Republicans. What matters for Player 2 is simply how large the insider's trade is, she doesn't care about who initiated it.

[30] Empirical studies such as Lakonishok & Lee (2001) and Hillier & Marshall (2002) still report θ in corporate settings because it measures the residual price drift conditional on a trade being disclosed. In other words, θ captures how much of the insider's informational advantage remains available to the public after the mandated disclosure. While irrelevant to corporate insider payoffs in equilibrium (since no trades occur), θ provides a useful benchmark for comparison with Congress, where trades are observed and followers can systematically benefit from this drift.

[31] θ =0.24% is taken from Lakonishok & Lee's (2001) reporting-period drift, as a floor estimate of the copy-trade edge.

Trade size q ($)	Replication weight k	Drift θ	Follower payoff $\Pi^{P2} = kq\theta$ ($)	Strategy
20,000	0.3	0.0024	14.40	Copy
60,000	0.3	0.0024	43.20	Copy
100,000	0.3	0.0024	72	Copy

Table 8

Let's now look at the Congressional equilibrium under current real-world conditions.

Player	Condition	Empirical outcome	Strategy
P1	$q\alpha > pM$	Always satisfied[32]	Trade
P2	$\theta > 0$	Positive drift documented [33]	Copy
Nash Equilibrium			Trade / Copy

Table 9

These results highlight the contrast with the corporate case. In corporate settings, insiders do not trade in equilibrium, leaving no disclosure signal (q=0) and rendering θ irrelevant. While empirical studies (Lakonishok & Lee 2001; Hillier & Marshall 2002) report residual drifts, these are conditional on trades being disclosed and thus cannot be acted upon when no trades occur.

In Congress, however, enforcement is weaker, and insiders do trade. As a result, θ >0 becomes actionable: followers systematically copy and profit, even if the dollar payoffs per trade are modest. For example, a $20k insider trade replicated at k=0.3 with θ=0.24% yields only about $14 for the follower. The importance doesn't lie in the magnitude of a single trade but in the consistency of positive drift across many disclosures. Over time, small systematic gains can accumulate into substantial returns, which explains why replication strategies such as NANC and KRUZ are viable. The equilibrium in the Congressional setting is therefore Trade / Copy, unlike the Wait / Ignore outcome in the corporate benchmark.

[32] As we have seen in Tables 5-7.
[33] According to Ziobrowski 2004 and 2011 studies and the Unusual Whales report from 2024.

4.3 Tracker ETFs

Congress-tracking ETFs like NANC (Democrat-focused) and KRUZ (Republican-focused) attempt to replicate lawmaker trades disclosed via PTRs under the STOCK Act. Both were launched in February 2023 by Subversive Capital Advisor who partnered with Unusual Whales, aiming to monetize public political trade data. Unlike hedge funds or active managers, these ETFs rely entirely on lagged public PTR disclosures as their input data. In the case of NANC and KRUZ, these ETFs represent Player 2. As we know P2 copies if $\theta>0$. Looking at data provided by PortfoliosLab we can visualize the return comparison between SPY (the ETF representing the S&P 500) and NANC or KRUZ[34].

Figure 1

[34] KRUZ's ticker was eventually changed to GOP on March 21, 2025, according to the SEC.

Figure 2

Looking at the results found in Figure 1, we see that the cumulative return for NANC is of +73% since its creation, in comparison SPY returned +61%. NANC modestly outperformed SPY. This is consistent with the positive residual drift we have seen from Democratic trades.

Looking at the graph found in Figure 2; we see that the cumulative return for KRUZ (GOP) we have a positive cumulative return of +43% compared to a cumulative return for SPY equal to +75%[35]. KRUZ underperformed SPY substantially, showing Republican PTR trades left little residual α for followers. KRUZ continues to trade actively but with a clearly visible weaker performance and lower visibility compared to NANC. This is partly due to partisan asymmetry; the Unusual Whales 2024 Congressional Trading Report confirms that Democrats outperformed Republicans. Democrats had a cumulative return of +31%, Republicans

[35] SPY's cumulative return appears slightly different across the two charts. This occurs because the comparison tool rebases SPY separately in each chart (at ETF inception) and adjusts for dividends within each pairwise comparison. In absolute terms, SPY's return path is identical, the only thing that differs is the normalization method.

had a cumulative return of +26%, compared to +23% for the SPY benchmark. Republican PTR disclosures were more heavily concentrated in energy and defense stocks (e.g. ExxonMobil, Chevron, Lockheed Martin), sectors that lagged from 2023 to 2025 when the market was primarily driven by large-cap technology stock (e.g. Apple, Microsoft, NVIDIA). NANC, with greater exposure to these tech companies through Democratic trades, aligned more closely with the index leaders and thus tracked or exceeded SPY's gains, while KRUZ lagged. By the time KRUZ executed trades based on PTRs, much of the initial drift had been priced in, leaving little residual return, KRUZ often faced situations where $\theta \approx 0$ meaning copying made little sense. As we can see, this provides confirmation of real-world applications of the model established in Chapter 3. The contrasting outcomes of NANC and KRUZ represent two predicted equilibria: one where positive residual drift supports copying, and one where residual returns are negligible or absent. Their trajectories demonstrate that Congressional α is not automatically transferable into replicable ETF gains and only a small fraction of insider α survives as a residual drift θ after 45 days; instead, the follower's payoff depends on whether exploitable signal persists after disclosure. NANC falls into an equilibrium of Trade / Copy since $\theta > 0$ and KRUZ generally faces an equilibrium of Trade / Ignore since $\theta \approx 0$.

Overall, the empirical results demonstrate that lawmakers retain significant opportunities to profit from policy-driven information, while copy-trading strategies only capture a fraction of the profits. These patterns highlight the persistence of insider advantages despite disclosure rules. The following chapter examines potential policy reforms and their welfare implications, assessing how different regulations could change the equilibria we just observed.

5 Policy Scenarios and Welfare Analysis

5.1 Mandatory Blind Trusts

As discussed in Section 3.4, increasing the statutory fine M has a powerful deterrent effect by tightening P1's constraint $q\alpha > pM$, reducing marginal trading incentives even when audit probabilities remain low. Likewise, reducing the disclosure delay τ accelerates the decay of the insider's informational advantage $\theta(\tau)$, increasing follower responsiveness and indirectly lowering optimal trade sizes q^*. Since these mechanisms have already been modeled in detail, we now turn to more structural or institutional policy options.

We had already touched on the idea of having mandatory blind trusts for Congress in Chapter 2, we will develop this thought in more detail. Under an arrangement of mandatory blind trusts, legislators would be required to place their financial holdings under the management of an independent trustee. The trustee has full discretion to buy, sell, or hold assets, and the legislator has no visibility into the specific transactions being made. This would break the direct link between a legislator's private knowledge (e.g. upcoming bills) and their personal portfolio choices, since they cannot intervene or influence asset allocation. Blind trusts are already used in the U.S. executive branch: presidents and senior officials often establish them to avoid conflicts of interest[36]. Extending the practice to Congress would apply the same logic to legislators. Diversified Index Funds could also be an alternative or even a

[36] Blind trusts in the United States are not legally mandatory for presidents. Under federal conflict of interest laws (18 U.S.C. § 208) and Office of Government Ethics regulations, senior officials must avoid conflicts but may choose among several compliance mechanisms, including qualified blind trusts, divestment, or recusal. While blind trusts are often promoted as the "gold standard", they remain voluntary. President George H. W. Bush placed his assets in a qualified blind trust during his presidency and vice presidency under Reagan, providing a clear example of this approach in practice. President Barack Obama did not place his assets in a blind trust, relying instead on holdings in diversified mutual funds and Treasury securities, which posed little conflict risk. President Donald J. Trump did not establish a blind trust. Instead, he placed his businesses into a revocable trust managed by his sons, which one can clearly argue was not a true blind trust since he retained knowledge and potential influence. President Joe Biden didn't use a blind trust either, however his financial disclosures show that his assets are largely in diversified funds and retirement accounts, minimizing direct conflict potential.

complement to mandatory blind trusts. Legislators could be restricted to passive investment choices such as the S&P 500 index funds or diversifies ETFs. These funds track the overall market rather than relying on stock picking decisions, meaning there would be no scope in exploiting firm-specific insider knowledge. This approach would also avoid forcing complete divestment while still eliminating informational advantages. Both blind trusts and index-only restrictions converge on the same principle, that being that personal stock picking becomes impossible. Following that logic there should therefore be a complete elimination of individual stock trading for Congress. Legislators could no longer time trades in individual firms that may be affected by confidential policy deliberations. This effectively rules out the strategy space modeled in earlier chapters (no more trade size q decision to make on specific securities).

In the standard model we have developed, insiders decide whether to trade based on the inequality $q\alpha > pM$, where $q\alpha$ is the expected informational gain from trading and pM is the expected penalty. A mandatory blind trusts or the other restrictions we have seen would change this structure entirely since individual trading would be legally prohibited, we can therefore assume that any attempt to trade would carry out the maximum possible sanction. Formally, this is equivalent to setting the statutory fine M to infinity, we model this situation thusly:

$$M \Rightarrow \infty$$

The expected penalty becomes $pM \Rightarrow \infty$. No matter how large the trade size q or how strong the informational advantage α, the expected benefit $q\alpha$ can never outweigh the cost. The incentive constraint therefore always fails, and trading becomes an unfeasible strategy. The equilibrium results in the insider having to Wait and therefore the follower will ignore (since there won't even be a signal at all). The Nash equilibrium is therefore given Wait / Ignore.

Raising M fines or p audit probabilities requires continuous monitoring, data analysis and prosecution. Blind trusts remove this burden entirely, as once assets are transferred, compliance is ensured through monitoring the trust arrangement rather than scrutinizing transactions. Under a higher M or faster disclosure τ, insiders can still calculate whether a trade would be "worth the risk", whereas blind trust or index-

only rules would eliminate that possibility entirely. Enforcement of insider trading is well known to be hard because proving α is subjective and fact-intensive is no easy task. As we have seen, blind trusts bypass this challenge as regulators don't need to estimate α, q, p, or M as they must only verify whether assets are properly placed in a trust or index fund. Beyond deterrence, blind trusts would demonstrate a visible commitment to impartial governance. This might increase the American people's trust in Congress by removing even the appearance of trading on inside information. Congress would be more likely to make choices that are best for America rather than for personal benefits. Despite the logic behind these possible restrictions, political feasibility remains low as members will most likely resist. They could possibly argue that such restrictions would be infringing on personal financial autonomy or property rights. Such an implementation would also require an initial asset review where legislators' existing portfolios would need to be liquidated transferred or otherwise restructured into blind trusts or diversified index funds. This would require a comprehensive audit of holdings to confirm that no prohibited assets remain. After transfer, regulators must maintain continuous oversight to verify that assets stay within approved structures and that trustees are acting independently.

5.2 Transatlantic Gaps and the Case for Hybrid Harmonization

Looking beyond the United States, the European experience shows that no jurisdiction has yet achieved a system that fully deters insider advantages. Each system uses different forms of transparency, suggesting that a system merger could be beneficial. As a reminder, the United States STOCK Act requires a Periodic Transaction Report (PTR) for trades above $1,000. This, in theory, suggest transparency, but as we know there is a 45-day disclosure lag, where insiders can profit long before trades are visible to the public, and a very light $200 late filing fee. Late filing enforcement is also almost nonexistent with a detection rate of around 0.15% in 2023. The U.S. trade disclosures are also relatively vague as they are reported in ranges rather than exact q values.

In the European systems we saw in Chapter 2 (France, Italy and the U.K.), we understand that these systems emphasize wealth and income declarations rather than trade logs. European regimes are essentially designed to detect conflicts of interest. To enforce this concept lawmakers must disclose their total net worth, income sources and major asset holdings. France (HATVP) requires ministers and parliament members to file comprehensive statements of net worth and outside income at the start and end of their mandates. In Italy, law 441/1982 requires annual "dichiarazioni patrimoniali" listing family assets and income. In the U.K. parliament members must update the online Register of Members' Financial Interests within 28 days of acquiring any holding worth more than £70 or realizing a profit above £100. These public but vague[37] filings give voters a snapshot of a politician's financial situation. They reveal whether officials hold assets in industries directly affected by their legislative work (e.g. oil stocks held by energy committee members). Compared to the U.S. PTRs, European disclosures are arguably more comprehensive since they include non-traded assets (real estate, businesses etc.) alongside financial investments. However, there are some structural gaps. Reports are filed once per year in Italy or at mandate changes in France. This means officials could actively trade throughout the year without notice (unlike the U.S. in theory, despite the low fine and detection rate raising similar concerns). Penalties, much like the U.S., are generally minimal and consist in resignation and a hit in reputation but are rarely financial or criminal.

The U.S. offers a more detailed reporting, but a large delay and a low enforcement. Europe offers a broader asset view but hides timing advantages. Neither regime meaningfully shifts the insider's incentive constraint $q\alpha > pM$.

Harmonization, in our case, would imply a hybrid standard for both regions. We could have American style transaction reporting mixed with European style wealth declarations and most importantly penalties substantial enough to affect the equilibrium and disincentivize trading with insider knowledge once and for all. This would create consistency in transparency in the western world.

[37] Disclosure filings in European systems are generally public, but they remain limited. French and Italian declarations cover overall wealth and income but do not detail every single trade, while U.K. disclosure list only broad value bands without transaction volumes or timestamps. As a result, the information is public but often too vague.

5.3 Belief-Driven Equilibrium: Deterrence Without Harsh Penalties

As we have observed, actual enforcement against insider trading, whether it be in the U.S. or Europe, is objectively rare.

In America, following the STOCK Act (2012), fines are minimal (M = \$200), and audits are infrequent. Considering these conditions trading should occur almost all the time. Under these conditions, the trade constraint for P1 $q\alpha > pM$ implies that trading should almost always occur.

However, reported trades have declined sharply in recent years, falling from nearly 17,000 in 2020 to about 11,000 in 2023. It is difficult to know whether this reflect genuine abstention or simply underreporting, since we know that pM is a very low value. The most logical explanation is that many legislators restrain themselves due to reputational risks. Watchdog platforms, media coverage, and political opponents can amplify trades, which could create a perceived probability of scrutiny p' far higher than the objective audit probability p for lawmakers. In this sense, members of Congress may self-deter not due to a rule change, but rather due to a change in their personal expectations.

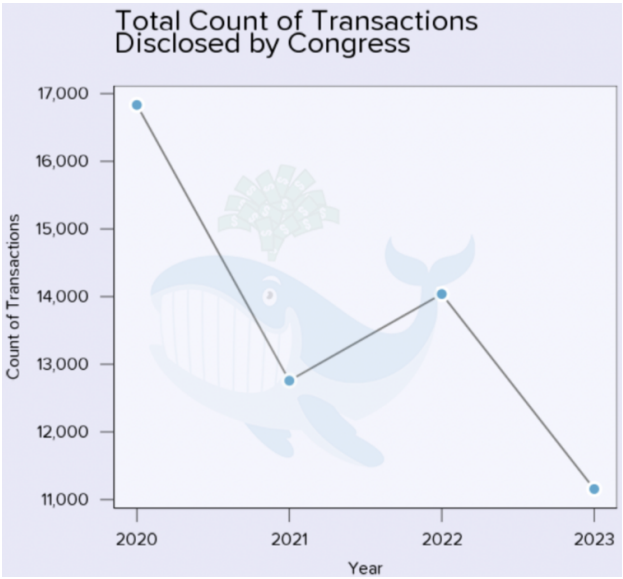

Figure 3

As can see from Figure 3, from Unusual Whales, the total count of transactions had reached one of the lowest levels in years in 2023. This is especially interesting considering the legal framework remained the same. Considering our trade constraint $q\alpha > pM$ we would expect trading to remain steady or grow, but never to diminish as lawmakers would continue to exploit their insider's informational advantage. The Office of the Clerk also confirms similar trends. Despite more than 6,000 PTRs being filed in 2023, only nine late fines were issued, with a detection rate of 0.15%. According to Unusual Whales, this drop is especially pronounced in the House, who face shorter electoral cycles and higher reputational risk. Watchdog platforms (like Unusual Whales) can now scrape PTR filings in real time, amplifying trades within just a few hours on social media. This large visibility raises the perceived probability of scrutiny ($p' > p$), making the Congress members less willing to trade since the trade condition seems to become $q\alpha > p'M$.

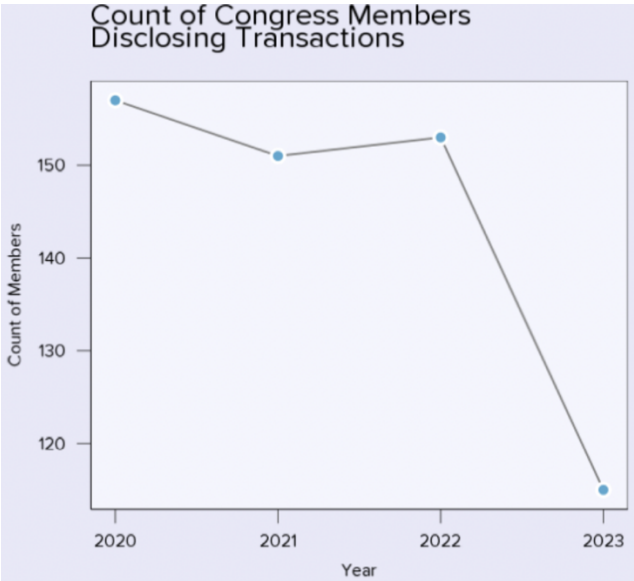

Figure 4

The number of members Congress filing PTRs also fell from almost 160 in 2020 to just over 110 in 2023. In other words, almost a third of the participants stopped disclosing after 3 years despite no rule changes[38].

[38] The total number of Congressional seats stayed constant (435 in the House, 100 in the Senate) between 2020 and 2023. Considering normal turnover from elections replace around 12% of members

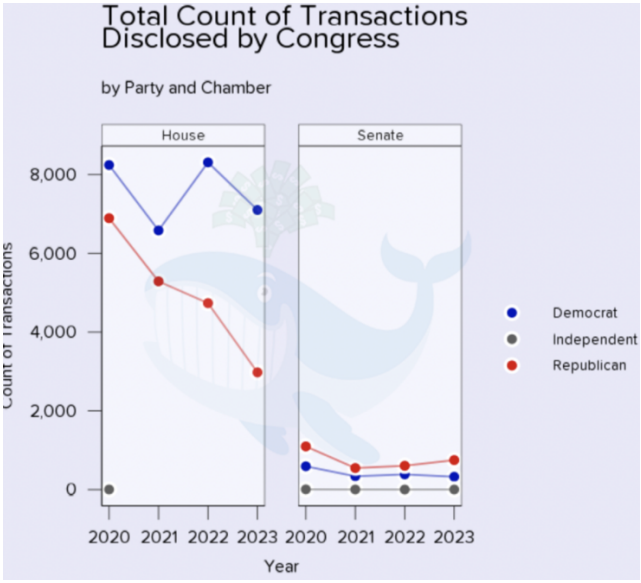

Figure 5

Looking for possible explanations to the trading decrease we can notice some differences among the House of representatives and the Senate. In fact, the House (435 members) accounted for most of the decline with a clear decrease from 2020 to 2023 whereas the Senate (200 members) remained relatively stable. Since the Senate pool is smaller to begin with, the absolute number of trading Senators is lower and varies less. The participation drop is therefore most likely driven by behavioral change among House members rather than the Senate. Though it seems that trades per person are still generally much lower for the Senate, this is most likely due to Senators serving longer terms and therefore being more concerned about damage to their reputation. Looking at the puzzling finding that there is a clear increase in the number of abstentions, this decline not only means that the total number of trades is decreasing (as we can see in Figure 5), but also that the pool of active traders is shrinking (Figure 4). This leads us to believe that this abstention rate is not random, and some legislators are willingly choosing to exit trading as a whole, most likely due to reputational and political costs outweighing their financial gains, this means that they really value these intangible assets more than what they would gain from trading.

per cycle, this does not fully explain the 30% drop in disclosing transactions. This indicates that the issue at hand actually reflect behavioral changes among continuing members.

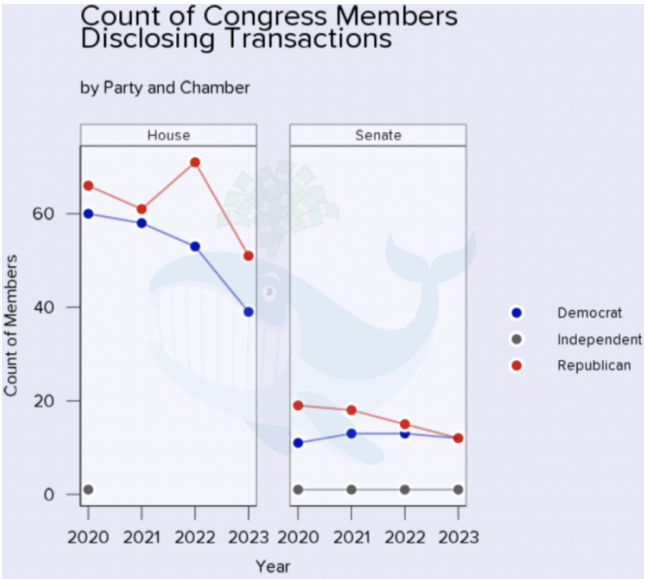

Figure 6

Let us glance at the partisan and chamber differences in further detail. In 2020, more than 60 Republican House members traded, by 2023 that value was equal to around 50. Democrat House members dropped from around 60 in 2020 to under 40 in 2023. This implies that both parties in the House reduced their activity the trend is not partisan. It is also curious to see that the concentration of trading focuses among a small group of legislators, most notably Nancy Pelosi (D-CA), which initially sparked the idea to write this thesis. According to Unusual Whales, only a minority of Congress members file PTRs. Other notable names include Tommy Tuberville (R-AL), Garret Graves (R-LA), Brian Higgins (D-NY), Dan Crenshaw (R-TX), and Pat Fallon (R-TX). These Congress members have reported frequent transactions and exceptionally high returns. For example, Nancy Pelosi's trades[39] (which are often executed by her husband) show a strong performance, in 2023 the returns were estimated at +65.5%. Graves and Higgins also reported large returns, with an estimated +107.6% and +238.9% return respectively. Crenshaw also reported an approximate +138% return according to the 2024 report by Unusual Whales. This

[39] The trades performed by Nancy Pelosi that drew public scrutiny were not direct stock purchases but rather long-term equity anticipation securities (LEAPS), a type of long-term call option. Since such options are particularly vulnerable to time decay, achieving consistently high returns with them suggests an ability to time the market with unusual precision, that precision most likely coming from insider information.

unusual distribution, being essentially split among members who value the reputational risk if trading occurs too high and other members who trade a lot, with large abnormal returns. As we have seen only about 25% of members file PTRs during a given year. An explanation for this increase in reputational concerns from Congress members could be the increasing popularity and general knowledge on the existing abnormal returns that some members report. For members in competitive districts (like swing states) or those aspiring to make it into leadership positions, the possible cost of media outlash may exceed any legal fine. Members with seniority or secure political positions within a party are not really concerned with media backlash, that is why they do not hesitate to trade. Ironically, some members which fall within this category, might be increasing the deterrent effect on others by drawing intense coverage, discouraging less prominent legislators who are aware that they could not withstand the same scrutiny.

To sum up, the decline in Congressional trading is clearly not explained by statutory enforcement itself, which is still negligible, nor by partisan reforms or new legislation. Instead, the evidence points to a belief-driven equilibrium, where members weigh financial gains against reputational costs. Ironically platforms like Unusual Whales both profit off these Congressional trades but also raise awareness that could eventually lead to regulation changes and which disincentivizes lawmakers to trade due to the reputational risk. Watchdogs, the media and partisan attacks have indeed raised the perceived probability of scrutiny well above the formal audit risk ($p' > p$), making abstention a rational strategy for most legislators. We can therefore conclude that we have a split landscape with a shrinking minority of members who trade frequently and report extraordinary returns, and a growing majority exiting the market to protect their reputation. With these dynamics in play, we see that the informal reputational mechanisms can shape behavior despite a failure on the legal side.

Conclusion

Throughout the length of this thesis, we have successfully answered several key questions that we pondered on in our introduction. We asked ourselves if the STOCK Act effectively changed lawmakers' behavior. To put it simply, with the help of our evidence we concluded that there was no meaningful alteration since the incentives remained large. The $200 penalty in case of late filing and the detection rate of 0.15% leads us to believe that these laws are simply symbolic and can be seen as a simple slap of the wrist for breachers. As we have said in Chapter 2, the STOCK Act was essentially a compromise, but the Congressional insider trading landscape is much alike the landscape prior to 2012 where there were mere principles with no real enforcement. The Trade / Copy equilibrium indicates that insiders have a rational motive to trade and that followers will copy since the residual signal, even after the maximum amount of 45 days, tends to persist. We have also seen that game theory is a great way to model behavior and explain why Congressional trading persists. Setting up a sequential game with two players (the insider and the public) helps us capture incentives for these players clearly, we have seen that the trading condition for the insider $q\alpha > pM$ almost always holds for the realistic scenarios we have seen except for the corporate benchmark case. Followers use the copy-trading strategy if the residual drift θ persists and is superior to 0. We have seen that copying generally leads to a positive drift, except when no trade is disclosed by the insider, when the disclosed trade produces a negligible or negative drift (as in the KRUZ ETF case), or when the residual signal decays too quickly to be captured. In all other situations, when insiders trade and $\theta > 0$, followers copy. We also saw how American and European regulation compares, noting that the U.S. provides trade logs through PTRs but with long delays and weak fines, while Europe tends to impose broad wealth declarations but with no transaction timing whatsoever. Neither of the two systems is perfect therefore none successfully closes the incentive gap for conflicts of interest while being in a position of power. We pondered on which reforms could shift the equilibrium, finding that blind trusts, shorter PTR deadlines, and hybrid harmonization directly address the incentive structure. A conflict of interest clearly

persists however, with lawmakers being the ones to decide if these laws meant to regulate themselves will be put in place, which they most likely will not do. Despite some lawmakers pushing to increase Congressional trading regulation as they believe, among other things, that this will increase public trust in the government and the American legal system, if there ever will be another Act intended to regulate Congressional insider trading it would seem rational to estimate that it would result in yet another symbolic compromise where some additional weak enforcement is introduced.

Thanks to our model we predict that Congressional stock trading will persist unless financial penalties or disclosure lags change, and followers can still capture residual abnormal returns. Due to enforcement being low, we also suggested that abstention might be driven by reputation and media scrutiny rather than by the law. Furthermore, belief-driven deterrence ($p' > p$) seems to explain the decline in reported trades despite Congressional trading regulation remaining the same since 2012.

Looking at our suggested policy variations, we saw that blind trusts eliminate insider trading entirely, leaving us in a Wait / Ignore equilibrium. Shorter PTR disclosure windows reduce residual drift, making copy-trading less profitable and insider trading riskier.

Finally, hybrid harmonization, by combining American transaction level transparency with European-like wealth declarations, and increasing penalties, realigns incentives for lawmakers in a seemingly just way.

The general ethical issue observed with Congressional stock trading is that, under current law, it undermines public trust, market integrity, and democratic legitimacy. Stronger regulation could align legislators' incentives with public service rather than their personal gain; this would hopefully lead to a restoration of the public's confidence in these institutions.

Some interesting directions that would be worth investigating in the future include seeing how reputational dynamics and the belief-driven deterrence would evolve over longer timeframes. If blind-trusts mandates are implemented it would be interesting to see the consequence, will lawmakers find a workaround, or would it be a sufficient regulation? We could also go further into detail, analyzing the trades of state-level

officials, the executive branch or even look at European politicians into more detail if detailed PTRs become standardized across the pond.

We should lastly ask ourselves one main question: if trading is profitable and enforcement is essentially nonexistent, then why do most lawmakers refrain from it? Are reputational concerns really the answer behind the question or is there something more to it? Despite the satisfactory answer found in the last chapter, it seems surprising. This suggest that reputational costs, electoral scrutiny, and personal beliefs are much stronger deterrents than legal or financial penalties. Equilibria in this setting are therefore shaped not only by formal rules but also by each lawmaker's subjective perceptions of detection risk, reputational damage, and electoral costs. Senior members, due to their generally more important roles and access to sensitive deliberations, may have a higher informational advantage, which can explain why they are more active traders than their junior counterparts. At the same time, some apparent abstention is not the result of ethical restraint but simply of non-reporting, given the low fines and detection rates currently. Ultimately, the variation in behavior suggests that the persistence or absence of trading reflects a mix of reputation, incentives, enforcement gaps, and institutional design rather than personal integrity alone.

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- U.S. Securities and Exchange Commission Rule 10b-5 (17 Code of Federal Regulations § 240.10b-5).

- STOCK Act (Stop Trading on Congressional Knowledge Act) (Pub. L. 112-105, 2012).

3. Official Portals & primary data

- Clerk of the U.S. House of Representatives: *Financial Disclosure Reports* (incl. Periodic Transaction Reports): *https://disclosures-clerk.house.gov/FinancialDisclosure*
- U.S. Senate Select Committee on Ethics: *Public Financial Disclosure* portal and instructions (incl. Periodic Transaction Reports): *https://efdsearch.senate.gov/search/home/*
- HATVP (France): *Répertoire des déclarations d'intérêts et d'activités* (French transparency authority).
- Italian Law No. 441/1982: *Disposizioni per la pubblicità della situazione patrimoniale di titolari di cariche elettive e di cariche direttive di alcuni enti.*

4. Reports, articles & media cited

- CBS News 60 Minutes (2011). *Congress: Trading on inside information?*
- Morning Consult (POLITICO) (2022). "Most voters of all parties support Congressional stock trading restrictions".
- Program for Public Consultation (University of Maryland) (2023). "Ban on stock trading for Members of Congress favored by overwhelming bipartisan majority".
- Unusual Whales (2022). *Official Congressional Trading Report 2022.* Unusual Whales. Available at: *https://unusualwhales.com/politics/article/congress-trading-report-2022*

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5. Legislative proposals referenced in text

- Gillibrand, K. & Hawley, J. (2023). Press release: *Landmark bill to ban stock trading and ownership by Congress & executive branch officials.*
- Kelly, M. & Ossoff, J. (2025). Press release: *Ban Congressional Stock Trading Act reintroduced.*
- Spanberger, A. & Roy, C. (2023). *TRUST in Congress Act (118th Congress, H.R. 374),* proposal to mandate divestment or qualified blind trusts for Members of Congress. Available at: *https://www.congress.gov/bill/118th-congress/house-bill/374*
- Spanberger, A. & Roy, C. (2025). *TRUST in Congress Act (119th Congress, H.R. 1908),* reintroduced version of the bill. Available at: *https://www.congress.gov/bill/119th-congress/house-bill/1908*

6. ETFs, filings & market-data tools used for comparisons

- PorfoliosLab: ETF comparison pages (*NANC vs. SPY, KRUZ/GOP vs. SPY*) used for volatility snapshots. Available at: *https://portfolioslab.com/tools/stock-comparison/NANC/SPY* and *https://portfolioslab.com/tools/stock-comparison/KRUZ/SPY*
- SEC: Tidal ETF Trust, Unusual Whales Subversive Republican Trading ETF: supplement noting the ticker change from KRUZ to GOP

effective March 21st, 2025. Available at: *https://www.sec.gov/Archives/edgar/data/1742912/000199937125002790/kruz-497_031825.htm*

- Subversive ETFs: product sites for NANC and GOP (formerly KRUZ). Available at: *https://subversiveetfs.com/*

7. Notes on usage

- The U.S. insider trading framework and disclosure mechanics seen in this thesis rely on Exchange Act § 16, SEC Rule 10b-5, and the STOCK Act with House and Senate portals for PTRs.
- European and U.K. comparators reference MAR Art. 19, UK CJA 1993, and the London Stock Exchange Model Code with the RNS disclosure
- Empirical context, the expected return, the expected drift and residual drift figures from Lakonishok & Lee (2001), Hillier & Marshall (2002), and the Ziobrowski et al. Senate and House studies.