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THE EXECUTION GAP IN CHINA'S DERIVATIVES MARKET: A STUDY OF THE DISCONNECT BETWEEN STRATEGIC INTENTIONS AND BEHAVIORAL OUTCOMES OF INDIVIDUAL FUTURES TRADERS

GUOHUA WU*
SCHOOL OF MANAGEMENT, HEFEI UNIVERSITY OF TECHNOLOGY, HEFEI 230061, CHINA, EMAIL: 2021010099@mail.hfut.edu.cn

Abstract: This paper focuses on a phenomenon that is common yet rarely examined in depth in China's derivatives market—the "Execution Gap" of individual traders, referring to the significant disconnect between their intended trading strategies and the actual outcomes of their actions. Traditional financial theory typically assumes that investors are rational and capable of executing their optimal strategies. However, in reality, especially in the highly leveraged, high-risk futures market, individual traders' behaviors often deviate from their predetermined intentions, resulting in irrational losses. In this study, we construct an innovative three-dimensional Intent-Behavior-Outcome analytical framework and, for the first time, introduce the core concept of the Execution Gap to measure and explain this disconnect. Utilizing exclusive survey data from 773 individual traders at Huishang Futures Company, we carry out an in-depth empirical analysis.The study finds that an overwhelming majority (over 95%) of individual traders acknowledge that futures trading requires professional knowledge and strict discipline, and more than 80% claim to formulate a plan before trading; nevertheless, nearly half (46.05%) admit they cannot strictly execute these plans, and over one-third (35.06%) fail to implement stop-loss orders in a timely manner. Further analysis reveals that "failure to cut losses" and "not following the plan" are the primary self-attributed causes of their losses, together accounting for over 62%. The theoretical contribution of this paper lies in deepening the understanding of the knowing-doing gap in behavioral finance through the introduction of the Execution Gap concept, extending it from the cognitive bias perspective to the concrete level of trade execution. This research challenges the traditional view of treating individual investors as a homogeneous group, revealing significant heterogeneity in their strategic cognition, execution abilities, and risk control. The conclusions of this study have important theoretical significance and practical implications for regulators formulating more targeted investor-protection policies, for futures companies optimizing their investor education and service systems, and for individual traders improving their self-awareness and trading performance.

Keywords: Execution Gap; behavioral finance; individual investor; futures trading; strategy execution

1. INTRODUCTION

Derivatives markets, particularly futures markets, are an important component of the modern financial system, and their price-discovery and risk-management functions are crucial to the stability and development of the real economy. With the deepening reform and opening up of China's financial markets, the futures market has attracted a growing number of individual investors. However, compared with institutional investors, individual traders are at a relative disadvantage in terms of information access, capital scale, risk control, and professional knowledge. Their trading behavior often exhibits characteristics of high risk, high turnover, and low success rate (Ferko et al., 2024). A longstanding puzzle troubling academia and industry is: why do so many individual traders, even when aware of the risks and possessing certain trading knowledge and strategies, still end up with unsatisfactory trading results?

Existing literature on investor behavior has mainly developed along two paths. The first path is based on the rational-investor hypothesis of classical financial theory, which holds that markets are efficient and investors' decisions aim to maximize utility. However, this theoretical framework struggles to explain

the market anomalies and irrational behavior of individual investors commonly observed in reality(Simonn, 2025). The second path is behavioral finance, which incorporates insights from psychology and sociology to explore how cognitive biases (such as overconfidence, the disposition effect, anchoring) and emotional factors (such as greed and fear) influence investment decisions (Kahneman & Tversky, 1979). These studies have greatly enriched our understanding of the root causes of investors' irrational behavior, but their analysis primarily focuses on the "formation" stage of decision-making, i.e., the process of forming intentions. Relatively insufficient attention has been given to the "execution" stage—the process of converting strategic intentions into actual trading behavior. Between strategy formulation and final trading outcome lies a critical yet often overlooked link: strategy execution.

In practice, many individual futures traders can clearly articulate their trading philosophy, risk-control principles (such as stop-loss rules), and capital management plans, but in the fast-changing market environment, these established intentions are often abandoned and replaced by impulsive, emotional trading behaviors. We call the rupture between strategic intentions and actual behaviors the Execution Gap. The existence of this gap may be a key variable explaining why individual investors commonly incur losses. It is not only a concrete manifestation of psychological biases at the behavioral level, but also a complex issue that integrates discipline, self-control, environmental pressure, and technological factors.

To date, there is a lack of systematic theoretical and empirical research specifically addressing the Execution Gap of individual traders in the futures market. Most studies either analyze individual investors as a whole in terms of aggregate behavioral patterns (Barber & Odean, 2013) or focus on the impact of a single cognitive bias, failing to deeply investigate the mechanism of failure to convert knowing into doing. In particular, in the Chinese context, individual investors account for a considerable proportion of futures market trading volume, and their behavior patterns and profitability directly relate to market stability and the effectiveness of investor protection(Du & Sun, 2021). Therefore, in-depth research on the "Execution Gap" phenomenon of Chinese individual futures traders not only fills a theoretical gap but also has urgent practical significance for guiding market practice and optimizing regulatory policies.

Based on this, the present study aims to construct a three-dimensional Intent-Behavior-Outcome framework for analyzing the trading behavior of individual investors and to formally propose and define the concept of the Execution Gap. We utilize an exclusive survey dataset from Huishang Futures Company, containing 773 real individual futures traders (Huishang Futures, 2019), to explore the following core questions:

(1) Does a significant "Execution Gap" exist between strategic intentions (such as planning and setting stop-loss orders) and actual trading behavior for Chinese individual futures traders?

(2) What are the specific manifestations and the magnitude of this gap?

(3) What underlying factors give rise to the Execution Gap, and how do individual traders perceive these factors?

(4) How can this gap be theoretically explained, and what possible approaches are there to bridge it?

The marginal contributions of this paper are reflected in several aspects:

- Theoretical contribution: We are the first to explicitly propose and systematically articulate the Execution Gap concept, providing a new analytical perspective for behavioral finance research. By extending the focus from cognitive biases in decision-making to the more critical execution stage, we deepen the understanding of the knowing-doing gap. Our three-dimensional Intent-Behavior-Outcome model and the deconstruction of the Execution Gap into multiple dimensions (discipline, emotion, cognitive resources, etc.) offer a concrete analytical tool for future research on investor behavior. This framework transcends the simplistic view of treating individual investors as a single "irrational" group and allows finer characterization of different investors' performances on the "knowing" and "doing" dimensions, enabling more targeted behavioral interventions.
- Empirical contribution: Using unique micro-survey data, we are the first to quantitatively measure and attribute the Execution Gap among Chinese individual futures traders. This provides direct empirical evidence of the phenomenon and reveals significant heterogeneity within the individual investor population.
- Practical contribution: The findings offer important references and insights for industry practice. Futures firms can use these results to improve the content of investor education; regulators can develop more targeted investor-protection measures; and individual traders can better understand themselves and strengthen their trading discipline.

2. MATERIALS AND METHODS

2.1 Theoretical Framework and Conceptual Definitions

Before delving into the behavioral patterns of Chinese individual futures traders, it is necessary to construct a theoretical framework that clearly depicts the entire process from decision to action. Traditional financial models often simplify investment decisions as a rational choice process based on expected-utility maximization, while behavioral finance highlights how cognitive and emotional biases interfere with this process. However, neither perspective adequately focuses on the transition from "decision intent" to "trading behavior." This section aims to fill that theoretical gap by integrating relevant theories from strategy management, psychology, and behavioral finance to build a three-dimensional Intent-Behavior-Outcome analytical framework. Based on this framework, we formally propose and define our core concept—the Execution Gap.

1.The "Intent-Behavior-Outcome" Analytical Framework

Investment, especially in the high-risk futures market, is a dynamic and continuous process rather than a one-time static decision. To fully capture its complexity, we decompose it into three interrelated yet distinct dimensions: strategic intent, trading behavior, and performance outcome.

(1) Strategic Intent : This refers to the entire set of cognitive frameworks and action rules that a trader forms before entering the market or when not actively trading, based on their knowledge, beliefs, goals, and risk preferences. It is the product of the individual's relatively "cool" and "rational" state, reflecting what the trader intends to do. Strategic intent encompasses multiple levels, including macro investment philosophies (e.g., value investing, trend following), mid-level trading plans (when to enter, when to exit, how large the position should be), and micro risk-control rules (e.g., setting stop-loss levels, limiting the maximum loss per trade). In our framework, strategic intent serves as the baseline measure of a trader's "rational cognition." For example, a trader may endorse the principle of "cut losses short, let profits run" and plan to set a stop-loss at no more than 2% of the account on every trade. These explicit, articulable rules and plans collectively constitute the trader's strategic intent.

(2) Trading Behavior : Trading behavior refers to the actual actions a trader takes during market hours in response to price fluctuations, information flows, and emotional pressures. It is the concrete realization of strategic intent in a real environment, reflecting what the trader actually does. Trading behavior is observable and recordable as objective facts, such as the frequency of order placements, the size of positions held, the execution of stop-loss orders, and whether a trader adds to or reduces positions when facing losses. Trading behavior is not only guided by strategic intent but is also heavily influenced by the real-time market environment, the trader's emotional state (greed, fear, anxiety), physiological factors (fatigue, stress), and execution tools (trading software convenience, network latency). In the high-leverage, fast-paced environment of the futures market, the potential divergence between trading behavior and strategic intent is significantly amplified.

(3) Performance Outcome : Performance outcome is the financial consequence directly resulting from trading behavior, i.e., the profit or loss in the trader's account. It is the ultimate criterion for measuring trading success, reflecting how well the trader performed. Performance outcome is the product of the combined effects of strategic intent and trading behavior, and it, in turn, feeds back to influence future strategic intent and behavior. For instance, an unexpected large gain might reinforce a trader's overconfidence, making them more prone to deviate from cautious plans in future trades; conversely, a painful loss might cause a trader to hesitate in the next trade out of fear, missing good opportunities. Such feedback loops make the entire Intent-Behavior-Outcome system dynamically evolving.

These three dimensions together form a complete analytical loop. Strategic intent is the starting point, trading behavior is the process, and performance outcome is the end point, with outcomes feeding back to modify new strategic intents. Understanding the relationship among these three, especially the connection and the break between intent and behavior, is key to solving the trading dilemmas faced by individual investors.

2.Definition and Theoretical Implications of the Execution Gap

Based on the above three-dimensional framework, we formally introduce the core concept of the Execution Gap.

Definition: The Execution Gap is defined as the systematic, non-random deviation between an individual trader's pre-established, rational "strategic intent" and the "trading behavior" actually exhibited under real-market pressure (particularly in high-risk derivatives markets). It quantifies the "distance" between knowing and doing, and serves as a key explanatory variable for the large discrepancies between idealized trading models and real-world trading outcomes.

The theoretical implications of the Execution Gap can be understood on several levels:

Behavioral Phenomenon (Beyond Cognitive Bias): The Execution Gap is fundamentally a behavioral phenomenon rather than a purely cognitive bias. Traditional behavioral finance theories, such as Prospect Theory, primarily explain how people think and decide under uncertainty (i.e., why the process of forming strategic intent deviates from rationality)(Kahneman & Tversky, 1979). In contrast, the Execution Gap focuses on what happens after decisions are made—on the action level where intentions

can be betrayed. For example, a trader may fully understand and agree on the importance of setting stop-loss orders (correct cognition), but when a position goes into loss, they might fail to implement the stop-loss because an emotion like "hope for a rebound" takes over (behavioral deviation). Thus, the Execution Gap shifts the research focus from "thinking wrong" to "doing wrong."

Context-Dependence: The magnitude of the Execution Gap is highly context-dependent. It is not fixed but heavily influenced by the situational pressures faced by the trader. When simulating trades or reviewing historical prices to make plans, a trader is like a captain on shore planning a voyage, with a clear mind and logical reasoning. Once thrown into the stormy seas of the real market, with real-time fluctuations in account balance, contagion of market sentiment, and fleeting opportunities, their cognitive resources become heavily strained. Psychological "ego depletion" theory suggests that willpower and self-control are finite resources that get consumed under high pressure and frequent decision-making(Baumeister et al., 1998). Futures trading is precisely such an environment of high cognitive load and emotional stress, making it prone to triggering an Execution Gap. In practice, as high as 97.02% of surveyed traders admitted they had encountered opportunities but hesitated and missed them—a striking example of how situational pressure (fear of missing out or analysis paralysis) can cause inaction, another facet of the Execution Gap.

Multi-Dimensional Composite Concept: The Execution Gap is not caused by a single factor but is the result of multiple intertwined factors. We can decompose it into several sub-dimensions:

(1) Discipline Gap: This refers to the failure to strictly follow pre-set trading rules, with the most typical manifestations being not cutting losses and not following the trading plan. This is the most direct and core manifestation of the Execution Gap.

(2) Emotional Gap: This refers to unplanned actions driven by emotions such as greed, fear, or the hope of luck. For example, greed may lead a trader to heavily add to a winning position, or fear may cause a trader to liquidate too early when facing losses.

(3) Cognitive Resource Gap: This arises when, in a rapidly changing market, limited information-processing capacity or distractions prevent a trader from executing the established strategy promptly and accurately. For instance, tracking multiple contracts simultaneously may cause one to miss the best entry or exit point(Tversky & Kahneman, 1981).

(4) Tool Gap: This refers to limitations due to trading software, hardware, or network conditions that prevent a trading intent from being smoothly and promptly translated into action. Although this has relatively minor impact under modern technology, it can still be a factor during extreme market conditions.

Revealing Investor Heterogeneity: The Execution Gap also uncovers the heterogeneity within the population of individual investors. It is inaccurate to label all individual investors as uniformly "irrational." In reality, there are huge differences among them. Some traders may have high levels of cognitive understanding but poor execution, while others may execute trades reasonably well but have fundamentally flawed strategies or intentions. Introducing the concept of the Execution Gap allows a more nuanced classification of individual investors, helping to identify the main dilemma faced by each type of trader, and providing a theoretical basis for personalized investor education and support services.

In summary, the Intent-Behavior-Outcome framework and the proposed Execution Gap concept provide a new theoretical toolkit for systematically studying the behavioral dilemmas of individual futures traders. This approach goes beyond pure cognitive bias analysis by shifting the focus to the critical execution stage and emphasizing the decisive role of contextual pressure and self-control in trading success. It lays a solid theoretical foundation for the subsequent empirical analysis of the behavior disconnect among Chinese individual futures traders.

2.2 Data and Methodology

To empirically test the Execution Gap of Chinese individual futures traders, we use a unique micro-survey dataset. This data comes from a special questionnaire conducted in 2019 by Huishang Futures Co., Ltd. on its customers. Compared to publicly available market trading data, the questionnaire data directly captures traders' strategic intentions, self-perceived behavior patterns, and their attributions of profit/loss causes, providing valuable first-hand information for analyzing the disconnect between intent and behavior.

1.Data Source and Sample Characteristics

The data used in this study originate from the "Customer Trading Situation Survey" carried out by Huishang Futures. The survey aimed to understand clients' trading habits, risk perceptions, knowledge needs, and service expectations. The questionnaire was distributed to active clients via the company's trading software and customer service system, yielding 773 valid responses. The sample covers individual futures traders with diverse capital sizes, trading experience, and geographic distribution, providing reasonably good representativeness.

The questionnaire was carefully designed to cover the core dimensions of interest for this study. For example, questions about "developing and executing trading plans," "stop-loss behavior when facing losses," and "full-position trading" directly correspond to the trader's strategic intent and trading

behavior. Open-ended questions on "common reasons for losses" and "investment aspirations" provide rich textual data on traders' self-perceptions and attributions. In terms of sample composition, all 773 respondents are individual traders, which aligns with our focus on individual investors. They trade real capital in China's futures market, so their feedback and behavior are of high practical relevance. The uniqueness of this data lies in that it is not from a laboratory simulation or inferred from aggregate market data, but directly derived from the participants' self-reports. This allows us to unprecedentedly probe into the personal "inner world" of individual traders and study the complex relationship between their strategic intentions and actual behavior.

2.Core Variables and Measures

Based on the above framework, we extract and define the following core variables from the questionnaire to measure different aspects of the Execution Gap:

(1) Strategic Intent (measurement): This reflects the trader's cognition and planning in a rational state. We measure it with the following questions:

Plan Formulation Intent: Question 1 asks, "Do you formulate a trading plan before trading?" Respondents choosing "Yes" (including those who answered "Yes, but cannot strictly execute" and "Yes, and can strictly execute") are considered to have the intent to formulate plans.

Risk-Control Intent (Stop-Loss): Question 2 asks, "When a trade incurs a loss, can you cut your losses in time?" Theoretically, all rational traders should treat timely stop-loss orders as a core risk-control principle. In addition, Question 7—"Do you agree that futures trading is a technical process requiring learning and practice? Do you think that successful futures trading requires in-depth study of futures trading rules?"—had an extremely high agreement rate (95.34%). This indicates that nearly all traders cognitively recognize the professionalism and discipline of trading, forming the cognitive basis of their risk-control intent.

Position Management Intent: Question 4 asks, "Do you like to trade with a full position?" Given that full-position trading carries extremely high risk in a leveraged futures market, respondents choosing "No" are considered to have a prudent fund management intent.

(2) Trading Behavior (measurement): Trading behavior is the manifestation of strategic intent in actual operations. We measure it directly via "execution" related options in the questionnaire:

Plan Execution Behavior: Among those who answered "Yes" to having a trading plan (Q1), we further distinguish between "able to strictly execute" and "unable to strictly execute." The proportion of respondents who cannot strictly execute their plans directly reflects the "execution gap" at the plan implementation level.

Stop-Loss Execution Behavior: In Q2, the proportion of respondents who answered "cannot" cut losses timely measures the execution gap in this core risk-control aspect.

Position Management Behavior: In Q4, the proportion of respondents who answered "Yes" (i.e., they like full-position trading) reflects actual behavior deviating from the cautious intent in fund management.

Opportunity Capture Behavior: Q3 asks, "Have you ever encountered a situation where you did not follow up in time on a market move, and by the time you decided to act, the opportunity was gone?" The proportion answering "Yes" reflects an execution gap due to hesitation or inertia driven by emotion—i.e., "should-have-done but did not do" behavior.

(3) Performance Attribution: Performance attribution reflects the traders' perceptions of the causes of their trading results (especially losses). This can be seen as an indirect measure and explanation of their own Execution Gap. We mainly use the open-ended responses to Q8: "Please list your common reasons for losses." We categorize these reasons, focusing on execution-related attributions such as "can't cut losses," "didn't follow the plan or lack of execution," "greed or fear in mindset," "holding losing positions," etc. The distribution of these attributions provides key clues to understanding the inner composition of the Execution Gap.

2.3 Research Design and Analytical Methods

The design of this study aims to systematically reveal and measure the existence of the Execution Gap and to explore its manifestations and internal structure. The analysis proceeds in three steps:

Descriptive Analysis: We perform comprehensive descriptive statistics on the survey data to clearly present the basic distributions of strategic intent, trading behavior, and performance attribution among individual futures traders. For example, we calculate the proportions of traders who formulate plans and those who cannot execute them; the proportions who claim to agree with stop-loss but actually cannot perform it; and what traders themselves consider the primary causes of their losses. This step aims to visually present the prevalence and severity of the Execution Gap.

Gap Quantification and Comparison: We compare the proportions reflecting strategic intent with the corresponding proportions reflecting the appropriate behavior, thus quantifying the size of the Execution Gap. For example, we compare the proportion who "claim to cut losses in time" (Q2 "Yes" responses) with those who list "failure to cut losses" as a cause of losses in Q8. More directly, among the traders who have plans (Q1 answers "Yes" – combining both those who can and cannot execute), we calculate the proportion who cannot execute them (the ratio of "cannot execute" respondents to all planners) as a

direct measure of the "plan execution gap." Through such comparative analysis, we can clearly see the huge gap between "what they want to do" and "what they can do."

Structural Attribution Analysis: We conduct a deep analysis of the survey results on reasons for losses. By categorizing and ranking these self-attributions of loss, we identify the core elements of the Execution Gap. We focus on loss reasons related to discipline, emotion, and cognition, and link them with other survey questions to construct an explanatory model of the causes of the Execution Gap. For example, we examine whether the loss reason "not following the plan" is highly correlated with the behavior "unable to strictly execute plan," thereby validating our theoretical framework.

Through the above research design, this paper goes beyond simple phenomenon description and delves into the internal structure and formation mechanism of the Execution Gap. By using this unique survey data, we provide a solid empirical basis and deep theoretical insight for understanding the behavioral dilemmas of China's individual futures traders.

3 RESULTS

This section presents systematic empirical evidence of the Execution Gap among Chinese individual futures traders, based on detailed analysis of the 773 valid questionnaires. We start with the disconnect between strategic intent and actual behavior, quantifying the breadth and depth of this gap, and then deconstruct the gap's internal structure through an analysis of traders' self-attributions of loss.

1. Widespread Rational Intent vs. Significant Execution Disconnect

Our data reveal a seemingly paradoxical yet crucial phenomenon: the vast majority of individual futures traders demonstrate a considerable degree of "rationality" at the cognitive level, but this rational cognition encounters huge barriers when translated into actual actions.

Trading Plan Formation and Execution Gap: First, in terms of trading plans, the data show a strong "planning intent." Among all 773 respondents, a total of 649 individuals (83.95%) reported that they formulate a trading plan before trading (including 356 who said "yes, but cannot strictly execute" and 293 who said "yes, and can strictly execute"). Only 16.04% of traders admitted they never make a plan. This clearly indicates that over 80% of individual traders agree with and intend to guide their trades through advance planning, reflecting widespread rationality at the level of strategic intent.

However, when we shift our focus to the execution of these plans, the Execution Gap immediately emerges. Among the aforementioned 649 traders who create plans, as many as 356 (54.85%) admit that they "cannot strictly execute" their plans. In other words, more than half of the traders with good intentions "betray" their plans in action. From the entire sample perspective, traders who acknowledge "having a plan but cannot execute it" make up 46.05% of all respondents—about 1.2 times the proportion of those who "have a plan and can execute it" (37.90%). This constitutes the first core gap identified in this paper: the "plan execution gap." It profoundly reveals the enormous obstacle between "knowing what should be done" and "actually doing it."

Stop-Loss Control and Execution Gap: Second, a similar rupture appears in the core risk-control link—stop-loss execution. Question 2 shows that 502 traders (64.94%) claim they "can" cut losses in time. This indicates that nearly two-thirds of traders, at the cognitive and intentional level, see stop-loss as a discipline that can and should be executed. However, this proportion itself is already alarming, because it also means that over one-third (35.06%) of traders admit in self-evaluation that they cannot cut losses in time, which is itself a stark direct manifestation of the Execution Gap.

More revealing evidence comes from the analysis of loss attributions. In Q8, when asked about common reasons for losses, "not cutting losses" (stop-loss too late or too frequently not used) topped the list, mentioned 326 times, accounting for 42.17% of the total sample. This figure is highly consistent with the 271 traders (35.06%) who claimed they "cannot" cut losses in time, and the slight difference between them is quite insightful. It suggests that among the 502 traders who said they "can" cut losses, there is still a subset (about $326 - 271 \approx 55$ individuals, or possibly more) who in actual trading suffer losses due to stop-loss issues and cite it as a main cause of their losses. This indicates that even for those who believe they "can" cut losses, the quality and consistency of their execution fall far short of the ideal. In short, a deep gap exists between the intention of "knowing to cut losses" and the behavior of "actually executing stop-loss effectively."

Position Management Gap: Third, in terms of capital management, we also observe a divergence between intent and behavior. Question 4 shows that up to 70.76% of traders state they "do not" like full-position trading, reflecting a broadly cautious intent to control position size and avoid excessive risk. Nevertheless, 29.24% of traders admit that they "do" like full-position trading. This behavior directly contradicts the cautious fund management intent, and it is also confirmed by the loss attributions in Q8. "Full positions or heavy positions" were cited by 55 traders (7.11%) as a cause of losses, ranking fifth. This indicates that nearly 30% of traders have a noticeable execution gap in position management: they succumb to the temptation of quick gains by using excessive leverage, abandoning rational risk-control principles.

Opportunity Execution Gap: Finally, a particularly noteworthy finding comes from Question 3. As many as 97.02% of traders admit they have experienced "market moved but I did not follow in time; when I wanted to act, the move was over". This reveals another facet of the Execution Gap: not only does it manifest as "acting when one should not" (e.g., failing to stop-loss or over-leveraging), but also as "not acting when one should". Such hesitation or inaction caused by fear, anxiety, or over-analysis ("execution inertia") is also a serious disconnect between strategic intent (to seize opportunities) and trading behavior (actual order placement), and it is a major source of opportunity cost.

2. Structural Analysis of Loss Attributions: Deconstructing the Execution Gap

If the above analysis quantifies the outward manifestations of the Execution Gap, then a deep dive into the responses to Q8 ("common reasons for losses") helps us gain insight into its internal composition. Traders' own perceptions of why they lose money directly reflect their inner struggles and behavioral deviations. We compiled and categorized the loss reasons from the 773 respondents and found that they are highly concentrated in factors related to execution (see Table 1).

Table 1. Common Self-Attributed Reasons for Losses among Traders

Loss Attribution	Count	Percentage	Attribution Category
Not cutting losses (stop-loss too wide or not used frequently)	326	42.17%	Discipline Gap
Not following plan / lack of execution	150	19.40%	Discipline Gap
Greed or fear in mindset	83	10.74%	Emotional Gap
Own lack of skill, missing trades or timing	64	8.28%	Knowledge/Skill Deficiency
Full positions, over-leveraging	55	7.11%	Discipline Gap
Frequent trading, chasing up and down	50	6.47%	Discipline/Emotional Gap
Holding losing position ("taking a loss")	33	4.27%	Discipline Gap
Thinking losses are normal	3	0.39%	Cognitive Bias
Total	764	98.84%	

(Note: The total count is less than 773 because some respondents did not answer or gave invalid answers; the table is based on valid responses.)

From Table 1, it is clear that the vast majority of traders' self-identified loss causes are related to failures of execution rather than failures of strategy or knowledge.

Discipline Gap as the Core Source: We classify "Not cutting losses," "Not following plan / lack of execution," "Full positions/over-leveraging," and "Holding losses (taking too long)" as elements of the Discipline Gap. These reasons collectively were cited a total of 564 times, comprising the overwhelming majority of all mentioned causes. Among them, "not cutting losses" and "not following plan"—the most typical manifestations of the Execution Gap—alone account for 61.57% of mentions. This emphatically proves that the primary conflict behind individual traders' losses is not "not knowing what to do", but "knowing what to do but not doing it." "Holding a losing position" is an extreme form of failing to cut losses, which further reinforces this conclusion. While virtually no one plans in advance to "hold losing positions" as a strategy, in the face of actual losses, a hope-driven mentality overwhelms rational principles and leads to this irrational behavior.

Emotional Gap as a Crucial Catalyst: The Emotional Gap is an important catalyst for lapses in discipline. "Greed or fear in mindset" was mentioned by 83 traders (10.74%), making it the third largest category of loss causes. Emotional factors are infinitely amplified in the high-leverage futures market. Greed drives traders to forget position-management principles when in profit, leading to risky over-leveraging; fear causes them to cut positions too early (frequent stop-loss) or to hesitate when opportunities arise. The behavior of "chasing tops and selling bottoms" is both a symptom of a breakdown in discipline and the result of greed and fear combined. Emotional interference is the direct psychological motivator that causes traders to deviate from their plans and fail to execute with discipline.

Knowledge/Skill Deficiency is Secondary: Notably, deficiencies in knowledge and skill are not identified as the primary causes of losses by traders themselves. "Own lack of skill, missing trades or timing" was mentioned by 64 traders (8.28%), which is far lower than the discipline and emotional factors. In contrast, Question 10 of the survey shows that a large portion of traders expressed a desire for training on "basic knowledge, trading rules, investment techniques" (12.81%) and "technical analysis" (6.73%). This suggests an interesting contrast: on one hand, traders recognize their own skill deficiencies and crave learning; on the other hand, when reflecting on losses, they more profoundly realize that even with better skills, failure is still highly probable if they cannot overcome the execution-related "demons" in their behavior. This implies a deeper problem: many traders may fall into a vicious cycle of "continuously learning new skills but never achieving stable profits," where the root cause is precisely the overlooked Execution Gap.

In summary, the empirical analysis clearly delineates the full picture of the Execution Gap among Chinese individual futures traders. It manifests as a comprehensive disconnect from trading plans, risk control, to position management. From the deconstruction of loss reasons, we find that this gap is mainly constituted by the Discipline Gap and the Emotional Gap, while traditional knowledge or skill deficiencies are, in the traders' own assessment, not the most lethal factors. This finding has groundbreaking implications for rethinking the content and direction of investor education.

3. Theoretical Explanation of the Formation Mechanism

The empirical results have clearly revealed the pervasive existence of the Execution Gap and its structural characteristics among Chinese individual futures traders. However, merely describing the phenomenon and attributing its immediate causes is not enough; a deeper theoretical explanation is needed. Why are rational strategic intentions so fragile on the path to execution? In this section, we integrate theories from behavioral finance, cognitive psychology, and neuroeconomics to propose an integrative framework explaining the formation mechanism of the Execution Gap, aiming to uncover its deeper roots.

We posit that the Execution Gap arises not from a single factor, but from the interplay between the trader's internal dual-system decision-making mechanism, limited cognitive and willpower resources, and external market pressures.

(1) Innate Dual-System Conflict: Nobel laureate Daniel Kahneman's Dual-System decision theory provides a foundational psychological basis for understanding the Execution Gap (Kahneman, 2011). This theory posits that human thinking is governed by two systems: System 1 (the intuitive system) and System 2 (the rational system). System 2 is slow, deliberate, conscious, and requires effort and logical reasoning. It handles complex calculations, careful planning, and long-term decision-making. The traders' strategic intent—such as formulating a trading plan, setting stop-losses, and managing positions—is created under the dominance of System 2. Before trading or during retrospection (when market pressure is absent), traders have ample time and cognitive resources to engage System 2 and make calm, rational analyses and plans. At this stage, they are the thoughtful "planners."

In contrast, System 1 (the intuitive system) is fast, automatic, unconscious, and emotional. It relies on heuristics, intuition, and affective reactions to make rapid judgments. System 1's advantage lies in its low energy consumption and quick response, suitable for handling everyday, repetitive tasks. However, in the complex and uncertain financial market, System 1's heuristics and emotional responses often lead to systematic cognitive biases (such as loss aversion, anchoring, herd behavior).

The essence of the Execution Gap can be seen as a dramatic shift in decision-making dominance from System 2 to System 1 in the real trading environment. When a trader enters real-time trading, especially when a position faces an unrealized loss or the market swings violently, the enormous pressure of time, uncertainty, and potential financial loss triggers strong emotional responses (fear, anxiety, greed). These emotional signals "hijack" the brain's decision center, activating emotional brain regions like the amygdala, and thus System 1 takes over. The trader instantly transforms from a calm "planner" into an impulsive "actor."

In this state, the carefully devised trading plan and risk-control rules constructed under System 2 are overthrown by the primal impulses of System 1. For example, when facing a loss, System 2's rule is to "execute stop-loss and obey discipline," whereas System 1's reaction, as described by Prospect Theory, is driven by loss aversion: the pain of realizing a loss is far greater than the pleasure of a similar gain(Kahneman & Tversky, 1979). To avoid this pain, System 1 produces a "wait, maybe the price will rebound" mentality, leading to the plan-violating behavior of "holding the loss." Similarly, when prices jump rapidly, System 1's greed is triggered, shouting to "chase the rise" and "go big," drowning out System 2's voice about risk control and the possibility of a pullback. In our survey, as many as 97.02% of traders had experienced "missing an opportunity", which is precisely the "freeze" response of System 1 in the face of opportunity due to fear of making a wrong judgment, overwhelming System 2's instruction to "enter as planned."

Therefore, the first mechanism behind the Execution Gap is the inherent conflict of the human dual-system decision structure under the high-pressure environment of the futures market. Strategic intent is the product of System 2, whereas behavioral deviation is the result of System 1 running amok.

(2) Resource Depletion: Finite Cognition and Willpower

While the dual-system model explains why deviations occur, the cognitive psychology concept of Ego Depletion explains why such deviations happen so frequently and are hard to avoid(Baumeister et al., 1998). Ego Depletion theory likens self-control or willpower to a physiological resource or muscle with limited capacity. Each time self-control is exerted (resisting temptation, making a difficult decision, suppressing emotion), it consumes this limited resource. When the resource is exhausted, the individual enters an ego-depleted state, exhibiting poorer self-control in subsequent tasks.

Futures trading imposes extremely high demands on traders' cognitive and willpower resources. Traders must maintain high focus for extended periods, continuously monitor price fluctuations, process massive information, suppress emotional impulses, and frequently make decisions between actions (buy, sell,

hold, exit). Every time they resist the temptation to chase markets or every time they decisively "cut the losses" when facing a losing position, it constitutes a significant exertion of willpower.

Such sustained high-intensity consumption makes individual traders very prone to entering an "ego depletion" state. A trader might strictly follow discipline in the first few trades of the day, but as trading time extends and decision counts rise, their willpower resource gradually depletes. By the afternoon session, when facing a loss or temptation again, they may no longer have the "psychological energy" to resist System 1's impulses, thus resulting in the Execution Gap. In our data, "frequent trading" was listed as the sixth-largest cause of losses (6.47%), which itself is not only a form of discipline failure but also a behavior pattern that accelerates willpower depletion. The more frequent the trading and the more decisions required, the faster self-depletion occurs, eventually leading to a collapse of execution ability at critical moments.

Moreover, pressures outside of trading—such as life stress, lack of sleep, physical fatigue—also pre-consume an individual's self-control resources, leaving them at a low level of willpower even before trading, making them more susceptible to the Execution Gap. Thus, the second mechanism of the Execution Gap is the contradiction between the high cognitive load of futures trading and the limited willpower resource of individuals. Traders do not simply not want to follow discipline; under sustained pressure, they often cannot continue to follow it.

(3) Environmental Reinforcement: Market Characteristics and Feedback Loops

The inherent characteristics of the futures market and its feedback mechanisms also serve to reinforce the Execution Gap.

First, the randomness of markets and a form of "survivorship bias" provide intermittent reinforcement for violating discipline. Financial markets can be quite random in the short run, which means that irrational behavior occasionally produces positive or even huge returns. For example, a trader might "hold the loss" without setting a stop and by chance the price reverses, not only avoiding a loss but achieving a large profit. Such a rare success creates a very strong positive reinforcement in the trader's brain, its effect far outweighing the muted rewards of ten disciplined trades. This "variable reward" pattern, akin to Skinner's variable-ratio schedule, greatly encourages traders to repeat the same risky behavior in the future, making it even harder to stick to discipline. Conversely, strictly following discipline (such as cutting losses quickly), while being the prudent survival strategy in the long term, often brings the painful immediate feedback of "stop-loss then price rebounds," which weakens the trader's willingness to adhere to it.

Second, the real-time feedback of profits and losses amplifies emotions. Unlike many other fields, futures trading provides instantaneous, digital, millisecond-level changes in profits and losses. The red (loss) and green (profit) numbers jumping on the screen directly impact the trader's emotional center. This real-time feedback mechanism keeps traders in a constant "fight or flight" stress state, greatly compressing the room for System 2 to think calmly. A rapidly widening unrealized loss can pull a person's emotions from calm to panic within seconds, triggering irrational behaviors of "cutting too soon" or "holding at all costs." In our data, traders listing "greed or fear in mindset" as the third-largest cause of losses is direct evidence of this real-time feedback amplifying emotional effects.

Finally, there is a lack of structured reflection and improvement mechanisms. Many individual traders, after incurring losses, often sink into regret and self-blame or rush to "win back" through revenge trading, rarely conducting systematic, data-driven trade reviews like professionals do. Their attribution of losses tends to be vague and emotional (e.g., "unlucky today," "couldn't control my mindset") rather than precisely identifying which link in the Execution Gap caused the failure. As our study shows, although they can generally attribute losses to "not cutting losses" or "not following the plan," they lack further analysis of why those things happened. This lack of structured feedback loops makes it hard for them to effectively learn from mistakes, causing them to repeatedly fall into the same Execution Gap trap.

In summary, the formation of the Execution Gap is a complex, multi-level systemic issue. It stems from the inherent dual-system decision-making flaw in human nature, is exacerbated by the high cognitive load of futures trading leading to ego depletion, and is further entrenched by the market's own random reinforcement patterns and immediate feedback characteristics. Understanding this integrative mechanism is a prerequisite for exploring how to bridge the gap. It tells us that simply providing more "knowledge" and "technique" (appealing to System 2) is far from enough; we must also focus on how to manage emotions, conserve willpower resources, and design better trading environments and behavioral interventions (thus constraining System 1).

4 DISCUSSION

This study, by introducing the core concept of the Execution Gap and conducting a systematic empirical survey of Chinese individual futures traders, has uncovered a severe disconnect between strategic intent and trading behavior. We find that the widespread problem of losses among individual traders is rooted more in failures at the execution level than in defects at the cognitive level. This conclusion poses

profound challenges to existing behavioral finance theory, investor education models, and market regulation practices, and it points the way to future improvements.

(1) Theoretical Advancements: Our core theoretical contribution is to extend and deepen the focus of behavioral finance from "cognitive biases" to the Execution Gap. Traditional behavioral finance has successfully explained why investors think wrong; our research emphasizes why they do wrong, even when they often think right. This provides a more complete and in-depth analytical framework for understanding the knowing-doing gap in financial markets. Our proposed Intent-Behavior-Outcome model and the multi-dimensional deconstruction of the Execution Gap (discipline, emotion, cognitive resources, etc.) offer a set of actionable theoretical tools for future research on investor behavior. It moves beyond labeling individual investors as a monolithic "irrational" group, allowing us to more precisely describe different investors' performances on the "knowing" versus "doing" dimensions, and thus to develop more targeted behavioral intervention research. Moreover, by introducing dual-system theory and ego-depletion theory from cognitive psychology into the analysis of trading behavior, we provide a micro-level psychological explanation for the formation mechanism of the Execution Gap. This not only enhances the explanatory power of the theory but also provides clear targets for designing strategies to bridge the gap. Future research could build on this by using experimental finance or neuro-finance methods to further investigate how different market conditions or individual traits (such as risk preference or self-control level) modulate the Execution Gap. For example, experiments could test whether traders who undergo specific willpower training show significantly improved execution under pressure. Additionally, our study provides a new empirical context and theoretical perspective for the strategy execution literature (Martin, 2010) at the level of individual decision-making.

(2) Implications for Investor Education: The findings fundamentally challenge the current knowledge-centric model of investor education. Our data show that as high as 95.34% of traders acknowledge the importance of learning, and many desire training in technical analysis and fundamental analysis methods. Yet, paradoxically, they report that the largest causes of their losses are "failure to cut losses" and "not following the plan." This indicates that the investor education currently provided by futures firms and industry associations, which often focuses on "technical skills" (technical analysis, trading rules, etc.), while necessary, is far from sufficient. Such education may solve the problem of "not knowing," but it does not solve the more difficult problem of "not being able to do."

Therefore, future investor education must undergo a profound transformation: shifting from "knowledge empowerment" to "behavioral empowerment." The emphasis should move from merely teaching investors how to read charts and indicators to helping them build and internalize strong "trading discipline" and "emotion management" skills. Concretely, innovation can proceed along the following lines:

- Introduce a "Behavioral Training Camp" model. Drawing on the concept of pilot simulator training, futures companies could develop high-fidelity trading simulation systems, not for practicing technical skills, but focusing on "discipline execution training." For example, the system could require users to set a stop-loss before placing any order, otherwise the order cannot be executed. It could also track the user's behavior under simulated losses (how long they hold a losing position, whether they move stop-loss points, etc.) and generate an "execution report" to help identify the user's behavioral biases.
- Make "psychology and self-management" core courses. Investor education content should incorporate much more about decision-making psychology (such as the dual-system theory), emotional management techniques (such as mindfulness, cognitive behavioral therapy), and willpower training methods (such as setting clear micro-goals, maintaining adequate sleep). The goal of education is no longer to turn investors into masters of analysis, but to help them become effective managers of their own emotions and behaviors.
- Promote a "trade journal" and "post-trade review" culture. Futures firms should design standardized trade journal templates to guide clients not only to record profits and losses, but to detail the decision basis for each trade, the emotional state at entry, the adherence to the plan, and the reasons for any deviations. Through structured post-trade review, vague excuses like "bad mindset" are transformed into concrete, analyzable, improvable behavioral issues, thereby breaking the vicious cycle of "repeatedly trading and failing."

(3) Implications for Futures Firm Services and Regulatory Policy: This study also provides new ideas for the innovation of futures firms' client services and for regulators' investor-protection efforts.

For futures firms: Their core competitiveness should not be limited to low commissions or fast trading channels; it should also include value-added services that help clients bridge the Execution Gap. In addition to the transformative investor education mentioned above, futures firms could:

Optimize trading software by incorporating "behavioral assistance" features. For example, include a "trading plan" module in the software where users must fill in their plan (entry point, stop-loss point, target) before initiating a position, and the system can automatically generate contingent orders. Also, develop a "cooling-off" feature: if the user incurs large losses or trades excessively within a short period,

the system can pop up a warning and, with the user's prior consent, temporarily restrict opening new positions, forcing the trader out of the market to avoid revenge trading.

Establish a client tiering system based on behavioral data. Using big data analysis of clients' trading behaviors (e.g., holding periods, stop-loss execution rate, position volatility), identify different types of clients with specific Execution Gap profiles, and provide personalized reminders and support. For example, for clients who frequently hold large positions, send them articles about the importance of position management; for those who often "hold losses," send case analyses on stop-loss discipline.

For regulatory authorities: Investor protection needs to go beyond traditional risk warnings and information disclosure. Regulatory agencies could:

a.Encourage and guide industry innovation in "behavior-oriented" investor education products and services. Regulators could incentivize futures firms through ratings, rewards, etc., to develop and promote tools and services that effectively enhance investors' execution capability, and include this as an important indicator of fulfilling investor-protection responsibilities.

b.Strengthen monitoring and guidance of irrational trading behavior. Regulators can use big data technologies to conduct macro-monitoring of overall individual investor behavior patterns. If widespread phenomena of chasing gains, panic selling, or excessive trading are detected, regulators can issue more targeted market risk warnings and guide futures firms to bolster risk reminders to their clients.

c.Cautiously evaluate and regulate retail access to algorithmic trading. Algorithmic trading is theoretically the ultimate weapon for overcoming the Execution Gap, as it removes human emotion and hesitation from the execution process. Regulators should, under risk-control prerequisites, study how to safely and compliantly guide individual investors to use rigorously backtested and validated algorithmic trading tools. This may be one of the most effective paths to fundamentally solving execution problems.

In summary, the Execution Gap is like a hidden reef that individual investors will inevitably encounter in the turbulent seas of the futures market. Acknowledging it, measuring it, and understanding it is the first step toward helping investors navigate the cycles and achieve growth. This research is only a beginning. We call on academia and industry to invest more resources in jointly exploring effective ways to bridge this gap, thereby promoting a healthier, more stable, and more inclusive development of China's derivatives market.

(4) Conclusion

The Execution Gap identified in this study highlights a critical reality: individual futures traders often know the right actions to take (planning, stop-loss, risk management) but frequently fail to execute them. Through a unique survey of 773 Chinese individual futures traders, we have shown that the majority of traders possess rational strategic intentions, yet a substantial portion cannot carry out those intentions, leading to significant losses. We constructed an Intent-Behavior-Outcome framework to analyze this phenomenon and introduced the Execution Gap concept to capture the "distance" between intended strategy and actual behavior. Our empirical findings reveal that discipline failures (e.g., not executing stop-losses or plans) and emotional factors (greed and fear) are at the heart of the gap, while lack of knowledge is surprisingly not perceived as the main culprit by traders themselves.

These insights have profound implications: they call for a shift in how we educate and support investors, from merely imparting knowledge to empowering disciplined execution and emotional control. They also suggest that regulators and firms should develop tools, policies, and services that directly address behavioral execution issues. Bridging the Execution Gap is essential for improving individual trader performance and ensuring a more stable and robust derivatives market. We hope this study serves as a starting point for further research and action to solve the Execution Gap, ultimately helping investors translate their strategic intentions into successful trading outcomes.

Data Sharing Agreement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The author have no relevant financial or non-financial interests to disclose.

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