

Research on the Impact of Commercial Activities on Athletes' Competitive Performance

—— Data Analysis of Qinwen Zheng's Commercial and Competitive Activities in 2024 and 2025

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Abstract:

This research is based on the data analysis of a famous Chinese tennis athlete, Qinwen Zheng's real-world commercial activities, endorsement income, career winnings, competitive performance(match statistics) and injury records throughout 2 tennis seasons in 2024 and 2025 with the help of verified open sources. Through her data, results proved that the density of commercial activities will to a large extent bring negative impacts on her competitive activities and her competitive performance in a further way. This research suggests that professional tennis athletes, including top Chinese tennis athletes, carefully manage commercial and competitive activities in order to make sure a balance between competitions during seasons as well as training and recovery during off-seasons.

Keywords: commercial activities, competitive performance, tennis athletes, data analysis

1. Introduction

According to news during tennis seasons, as well as interviews and news reports of popular tennis athletes and title favorites, it seems that in the competitive sports industry, there is an intriguing phenomenon which is that some athletes, especially tennis athletes, may have experienced fluctuations in their competitive performance and even canceled their matches due to chronic injuries or sudden injuries during matches when they sign new brand endorse-

ment deals and earn soaring endorsement fees. Some of them are even suffering from being questioned or criticized by the public for not having their commitment to train and play hard during big games because they are distracted by too many commercial activities.

This research aims to study the relationship between commercial activities and competitive performance of tennis athletes and tries to figure out to what extent off-court commercial activities may impact the athletic performance of professional tennis athletes

by doing data analysis of a famous Chinese tennis athlete, Qinwen Zheng's real-world commercial activities, endorsement income, career winnings, and competitive performance throughout 2 tennis seasons in 2024 and 2025, in which all the data are collected from publicly accessible online sources, including official data from Women's Tennis Association(WTA), income statistics from Forbes, Sportico, and news retrieval from brand press releases and official websites and so on.

On one hand, tennis is a personal sport and the competitive outcome entirely depends on the performance of tennis athletes themselves, which makes it easier to observe all the data of tennis athletes and identify the relationship between the commercial activities and competitive performance. On the other hand, tennis season spans almost 11 months with intensive global travels to most regions in Oceania, Europe, the Americas and Asia, leaving tennis athletes with virtually no off-season through the entire year, which makes the conflicts between commercial activities and training as well as recovery more pronounced and easy for making conclusions.

2. Research Hypothesis

Based on the research aims, there are 3 main hypotheses:

1. There is a straightforward negative correlation between

the frequency as well as density of commercial activities(new endorsement deals, brand events,etc.), and in-match competitive performance fluctuations as well as the possibility of cancellation

2. Commercial activities will negatively impact competitive performance by leading to cumulative fatigue even injuries and lack of recovery especially during the off-season period

3. Declines of competitive performance impacted by over-commitment to commercial activities may trigger more public doubts and criticism, which may in turn bring extra stress to athletes and further impact athletes' competitive performance and even their commercial value

3. Data Analysis

3.1 Competitive Performance and Career Winnings

Figure 3.1.1 shows the data of the main competitive performance, namely the Grand Slam results of Qinwen Zheng as well as 2 other title favorites, Aryna Sabalenka and Coco Gauff in comparison in the tennis season in 2025.

Figure 3.1.1

Athletes	Grand Slam result in 2025	Career winnings (US dollars)	Total income (US dollars)	Ratio of Career Winnings
Qinwen Zheng	French Open quarterfinals	1.60 million	22.60 million	7%
Aryna Sabalenka	French/ Australian Open runner-up; Wimbledon semifinalist; US Open Champion	15.00 million	30.00 million	50%
Coco Gauff	Australia Open quarterfinals; French Open Champion	8.00 million	33.00 million	24%

According to official statistics of the French Open from the WTA, Zheng's best Grand Slam result in 2025 was a quarterfinal finish at the French Open(Roland Garros), in which she lost to Sabalenka, achieving her career-best result while making Sabalenka advance to her second French Open Semifinal. Then in the finals, Gauff defeated Sabalenka and won her first Roland Garros title(French Open Champion).

Among the 3 tennis athletes, when evaluating the competitive performance across their Grand Slam achievements in 2025, Sabalenka was the strongest, with Gauff placing the second and Zheng the third, which is already shown in terms of their career winnings of 15 million, 8 million and 1.6 million dollars respectively. Zheng's ratio of career winnings to her total income in the entire year of 2025

was 7%, which made a huge difference to Sabalenka(50%) and Gauff(24%).

3.2 Endorsement Income

In terms of the ratio of endorsement income to total income shown in Figure 3.2.1, Sabalenka had 50% of her income coming from her endorsements, which implies that her income would be well secured even if she completely refused any commercial activities since she could rely on the other half of her income, her career winnings. Sabalenka would have a low dependence on any commercial contracts and have a wider selections of options which might help bring the least impact on her tennis training and recovery or adjust her pace before and after the tennis season.

Figure 3.2.1

Athletes	Total income (US dollars)	Career winnings (US dollars)	Endorsement income (US dollars)	Ratio of Endorsement
Qinwen Zheng	22.60 million	1.60 million	21.00 million	93%
Aryna Sabalenka	30.00 million	15.00 million	15.00 million	50%
Coco Gauff	33.00 million	8.00 million	25.00 million	76%

Gauff had 76% of her income coming from her endorsements, which was approximately 3 times her career winnings. Meanwhile, her competitive performance and her Grand Slam achievements proved that a higher percentage of endorsement income might not necessarily lead to a decline in athletic performance. The key variable might be whether the commercial activities would be well arranged, like when to engage, how much to engage, or to what extent they might interfere with athletes' training.

Unfortunately, Zheng had 93% of her income coming from her endorsements, which made it most likely for her to rely on her endorsement income, in other words, her commercial activities. There would be a higher possibility that she would sacrifice a lot of training time and recovery time in exchange for more commercial contracts and

activities. Additionally, there would also be a higher possibility that the higher the proportion of endorsement income, the stronger the motivation of athletes to engage in short-time monetization during the commercial window, and the smaller the margin to proactively scale back their commercial activities.

3.3 Commercial Activities and Competitive Performance

Figure 3.3.1 compares the data on Zheng's commercial income as well as career winnings and competitive performance in 2024 and 2025, which may combine the underlying connections between her commercial values and sports performance.

Figure 3.3.1

	The Year 2024	The Year 2025	Change
Total Income (US dollars)	20.60 million	22.60 million	+8.85%
Career Winnings (US dollars)	5.60 million	1.60 million	-71%
Yearly Endorsement income (US dollars)	15.00 million	21.00 million	+40%
Ratio of Endorsement	73%	93%	+20%
Total Singles Wins (WTA Tour Season)	50	20	-60%
Total Singles Loses (WTA Tour Season)	18	12	-33.3%
Total Matches Played (WTA Tour Season)	68	32	-52.9%
Win Rate (WTA Tour Season)	73.5%	62.5%	-11.0 percentage points (Relative 15.0%)
Grand Slam Wins	12 (in 4 events)	5 (in 3 events)	-58.3%
Best Grand Slam Result	Australian Open Runner-up	French Open Quarterfinals	--
Year-end Ranking	No.5	No.24	+19 positions (numerical drop)

For example, 93% of Zheng's income depended on her commercial activities in 2025, which was 20% more than that in 2024. Although Zheng's total income and endorsement income had increased from 2024 to 2025, her career winnings had dropped by 71%, which was not an ideal

change for a professional tennis athlete, especially in her best years after she started her competitive breakout and won the WTA Newcomer of the Year in 2022. Generally, the statistics of her tennis performance during the whole WTA tour season in 2024 and 2025, including total sin-

gles wins, total singles losses, total matches played and win rate, showed adverse changes while her commercial values were soaring at the same time.

Figure 3.3.2

Athletes	Change of Career Winnings	Change of Endorsement Income	Correlation between Commercial Activities and Competitive Performance
Qinwen Zheng	-71%	+40%	Negative
Aryna Sabalenka	+55%	+67%	Positive
Coco Gauff	-15%	+1%	Negative

When comparing the data on changes of career winnings and endorsement income of Zheng, Sabalenka and Gauff during 2024 and 2025, Figure 3.3.2 showed different results in the correlation between commercial activities and competitive performance, which means there may not be a straightforward negative correlation between commercial activities and competitive performance.

When taking a closer look at detailed lists of the monthly timeline of commercial activities in accordance with the season phases of Zheng in 2024 and 2025, as shown in

Figure 3.3.3, there are several specific observations in terms of Zheng’s real-world unforced errors(UE) during matches and competitive signals. Unforced errors refers to errors that belong to individuals’ errors without any other possible factors of other opponents. If tennis athletes have a higher UE count, it may indicate that they may suffer from mental lapses, overly aggressive tactics, physical fatigue, declines in concentration or anxiety during critical points.

Figure 3.3.3

Timeline	Commercial Events	Season Phase	Unforced Error(UE)	Health Conditions
January 2024	Anta, Nike, Wilson deals ongoing (no public activation event) no new deal	Pre-season -in-season Australian Open	21	Healthy
April 2024	2 new deals: Lancome Chagee	In-season	57	Healthy
June 2024	Gatorade activation begins	In-season Wimbledon	26	Healthy
August 2024	Ant Group partnership officially announced Vivo partnership in preparation	In-season Olympics	15	Elbow discomfort reported post Olympics
September 2024	Vivo official announcement Nike, Anta post-Olympic content begins	Late-season US Open	—	Elbow managed
October 2024	Chagee campaign content Gatorade content Vogue cover shooting	Late-season -Off-season	30	Finger injury, Elbow managed
November 2024	Audi brand spokesperson Vivo advertisement Chagee party Gatorade offline event Commercial shooting	Off-season	—	Elbow ongoing
December 2024	Queen Wen Wuhan tennis school cooperation announced	Off-season	—	Elbow ongoing

January 2025	Dior global brand ambassador announced Ant Group deal renewal	Pre-season	25	Elbow taped
February 2025	Audi, Anta, Rolex campaigns	In-season	—	Elbow discomfort
March 2025	1 new deal: Beats	In-season	36	Elbow managed
April 2025	Audi, Beats, Chagee, Lancome routine promotions	In-season	—	Elbow reported as bone-fragment friction
May 2025	Lancome upgraded	In-season	31	Visible pain
June 2025	Dior, Beasts pre-Wimbledon shoots Queen's activation	In-season	38	Visible pain
July 2025	Audi, Anta debrief	In-season -injury off	—	Elbow arthroscopy
August 2025	Wilson signature racket promotion	injury off	—	Post-op rehabilitation
September 2025	China Open return promotions	Late-season -comeback	33	Pain recurred
October 2025	Chagee upgraded	Late-season -Off-season	—	Elbow effusion/ rehabilitation

Although Zheng's UE counts might fluctuate as any tennis athletes, they showed a tendency to be a bit higher especially when she had new deals or intense commercial activities. When comparing the UE counts in April 2024(57) and May 2025(31) when Zheng was in her in-season phases in French Open, Zhang had totally different UE counts when attending the same matches on the same court surface and facing almost the same opponents, which left her commercial load based on the density of her commercial activities the only variable that would turned to bring negative impacts on her competitive performance. In November 2024, Zheng was supposed to have a short break and then winter training and physical preparation within her tennis off-season. For professional tennis ath-

letes, the off-season could be the only window in the entire year for systematic improvement, including physical buildup, technical and tactical refinement, and medical treatment of chronic injuries. According to Figure 3.3.4, after the WTA tour season ended in November 10, 2024, Zheng had intensively participated in several commercial events before she headed to Barcelona for her winter training in November 23. She didn't get the chance to take a break, leaving an extremely narrow window for her to recover or get refreshed physically. It could be an invisible reason for worsening her elbow issues and making her take her injury-off in 2025 due to the accumulation of fatigue and chronic injuries.

Figure 3.3.4

Timeline	Commercial Events	City/ Venue
Nov 11 2024	Advertisement shooting(brand unannounced)(social media leaks)	Shanghai
Nov 15 2024	Audi brand spokesperson unveiled at Guangzhou Auto Show	Guangzhou
Nov 17 2024	Gatorade "Chief Hydration Officer" offline activation	Shanghai
Nov 18 2024	Advertisement shooting for Lancome(social media leaks)	Shanghai
Nov 20 2024	Chagee 7 th anniversary internal event(reported)	Shanghai
Nov 21 2024	Vivo S20 "Aesthetic Ambassador" teaser (Weibo)	online
Nov 28 2024	Vivo S20 official launch and advertisement release	online

3.4 Public Doubts and Critics

3.4.1 Competitive Performance Decline

According to official reports on WTA and Chinese online platforms, such as Xinhua News Agency, Xinhuanet, China News Network, People's Daily, China Youth Daily and so on, Zheng lost several matches and withdrew from some competitive events in 2025 because of her elbow injuries(health reasons), leading to negative comments or doubts about her physical strength and tennis skills. The verified reports of her "third consecutive first-round exit in Wimbledon" on July 1, 2025 even triggered harsh opinions.

3.4.2 Commercial Activities Controversies

Meanwhile, several controversies about Zheng's commercial activities triggered public criticism on athletes participating in too many commercial offline events. For example, there were intense online discussions and controversies in public media discourse about "too much sponsor work during the off-season" in January 2025, "returning before full recovery" in July 2025, and "too many endorsement deals" or "off-court distraction" during the entire 2025 season.

4. Conclusions

In accordance with the research hypotheses mentioned before, there are conclusions based on data analysis.

4.1 Correlation Between Commercial Activities and Competitive Performance

There could be a kind of correlation between the density of commercial activities and fluctuations of athletes' competitive performance, given that the UE counts may be one of the deciding factors to prove that. However, there couldn't be always the negative correlation since there could be positive correlation if athletes could balance the percentages and ensure if they could prioritize their training and recovery rather than their management of commercial activities. If their competitive performance is stable, there will be a higher possibility that their commercial value increases simultaneously.

4.2 Impacts of Commercial Activities on Competitive Performance

Zheng's intense commercial activities within November 2024 significantly compressed the time of her physical preparation for the next WTA tour season which has already proved adverse impacts on her health conditions and in-match competitive performance as well as the

possibility of withdrawal in 2025. Due to the limitation of data and limited open sources publicized online, it is hard to calculate the exact extent of the impacts. Although UE counts can be considered as a clear set of statistics, there are still various influencing factors for UE counts themselves.

4.3 Public Doubts and Critics

There is a higher possibility that Zheng may suffer from a vicious circle which is that the worse her competitive performance is, the more commercial exposure she needs in order to maintain her total income. Then the more commercial activities she has to attend, the less time she has for training and recovery, leading to a further decline in her competitive performance. If her competitive performance keeps getting worse, she will have to take part in more commercial exposure for future career development, during which she has to confront more critics or negative comments on her because she has to keep standing under the limelight and standing in the midst of the public opinions.

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